

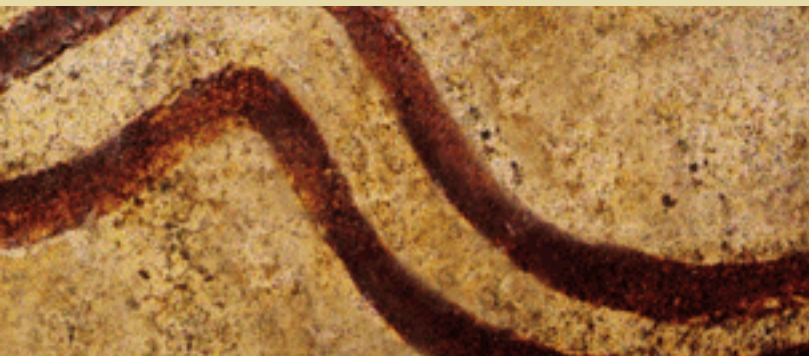
SCIENTISTS PREPARE  
FOR NEW ERA OF  
CIP-CHINA COOPERATION

CIP AND CHINESE SCIENTISTS  
ARE GEARING UP TO BEGIN  
WORK AT A NEW RESEARCH  
FACILITY, THE CIP-CHINA  
CENTER FOR ASIA AND THE  
PACIFIC, SLATED TO BEGIN  
OPERATIONS IN 2004

The new CIP-China Center will build upon more than two decades of research cooperation that have produced one of the highest rates of return on investment since the Green Revolution. In the early 1990s, CIP introduced virus cleanup technology that boosted Chinese sweetpotato production more than 30 percent on an estimated 600,000 hectares in Shandong. This increase was said to be equivalent to an almost 3 percent boost in food production worldwide.

According to the UN Food and Agriculture Organization (FAO), China is now the world's largest producer of potatoes and sweetpotatoes and, increasingly, one of its more efficient ones. Even so, the country faces numerous hurdles, including the need to raise rural income in several of its western provinces.

"The new Center will help meet China's challenges," says Yi Wang, CIP's resident scientist in Beijing. "We expect to have a seasoned team of experts on site once the Center is up and running." Counterpart staff will be drawn from a variety of Chinese agencies including the Chinese Academy of Agricultural Sciences, the Chinese Academy of Engineering, the Ministry of



Agriculture, and the Ministry of Science and Technology. The Center's research priorities will be established through participatory planning and project design, and all projects will be cofunded by CIP and national institutions.

Center research will focus initially on geographical areas where potato and sweetpotato can contribute most to hunger alleviation and income generation. Authorities in several provinces have already pledged human and financial support to the new venture.

#### A PLANT BREEDER'S DREAM

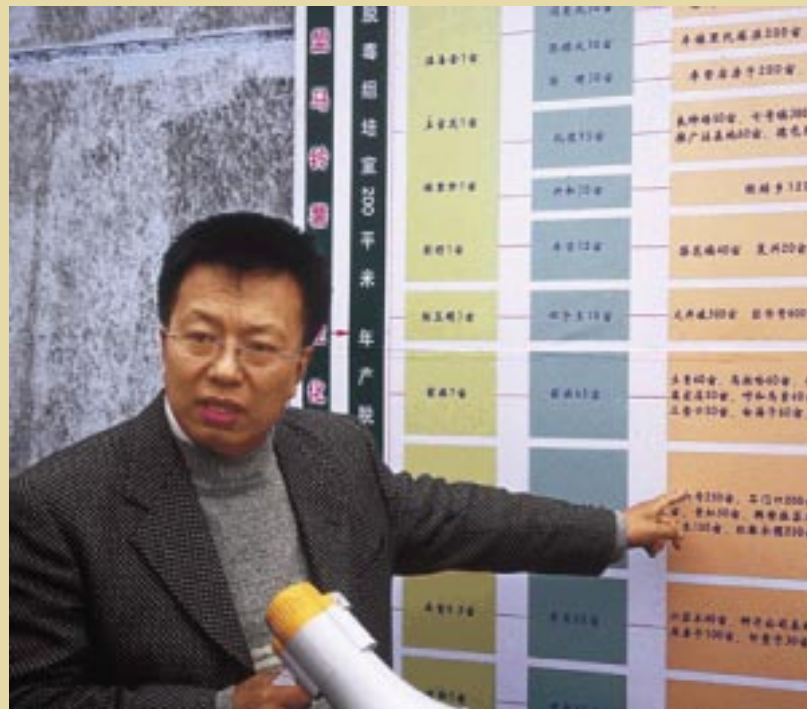
"One of the Center's top priorities," Yi notes, "will be to create a regional mechanism for the introduction, enhancement, and distribution of new potato and sweetpotato varieties." At the present time, most of the CIP-derived materials distributed in Asia originate in Lima, which involves high shipping costs and limits the scope of the materials that can be provided to regional cooperators.

"CIP plant breeders have often dreamed about establishing a plant breeding center on the Asian mainland," says Dapeng Zhang, CIP's senior sweetpotato breeder. Potatoes and sweetpotatoes, unlike grains, are not grown from conventional seeds, but from tubers and

vine cuttings. This means that it takes considerable amounts of time to produce large quantities of planting material. The existence of such a facility in Asia should greatly speed up utilization by allowing for rapid, local multiplication of "seed."

In addition, a plant breeding center in China would provide access to the full range of biotic and abiotic stresses, many of which are not present at CIP headquarters in Lima. According to Zhang, "Scientists at CIP headquarters in Peru cannot efficiently breed for resistance to the bacterial, fungal, and viral diseases of

*Continued on page 49*



YI WANG, CIP LIAISON SCIENTIST IN BEIJING, HAS LAID IMPORTANT GROUNDWORK FOR THE CENTER.

## LATE BLIGHT IN CHINA: A CAUSE FOR CONCERN

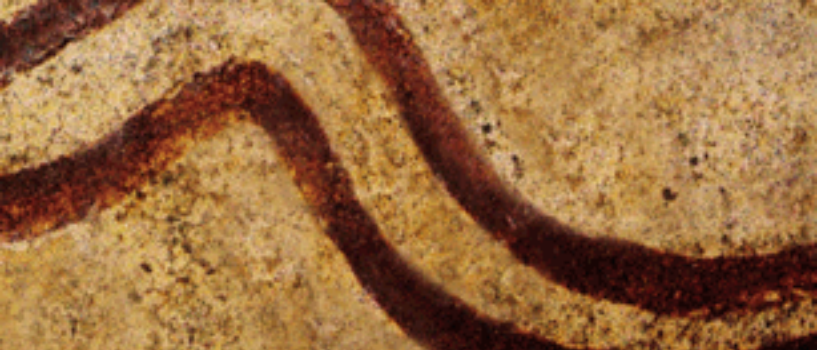
Chinese researchers working with the Global Initiative on Late Blight (GILB) report new evidence of greater virulence of the late blight pathogen and the increasing susceptibility of potato varieties previously considered resistant to the disease. According to He Wei of the Sichuan Academy of Agricultural Sciences, late blight is spread principally through infected seed stocks, and damage is concentrated mainly in the southwest and northeastern parts of the country. Yield losses have been estimated at US\$170 million annually, a figure that does not include vast amounts of potatoes lost in storage.

Both the A1 and A2 pathogen types (see *Late blight research zeroes in on a moving target*, page 35) are present in China, although as yet there is no evidence that they have recombined into a more dangerous variant of the pathogen. The A2 type was first detected in northern China in 1996, and has since spread as far south as Yunnan, near the border with Vietnam.

With the breakdown of resistance in China's older varieties, CIP is working with Chinese scientists to evaluate large amounts of genetic material in the hope of identifying resistant potato lines. A number of potentially resistant potatoes are also being multiplied for use by farmers or are being utilized in breeding programs in Hubei, Yunna, Sichuan, and Chongqing provinces.

Meanwhile, Chinese researchers are alarmed by a reduction in the effectiveness of the popular fungicide metalaxyl, which is used throughout China as a primary defense against the disease. This situation, combined with the breakdown in resistance, means that farmers may soon be forced to turn to so-called contact fungicides, which adversely affect soil flora and fauna and can be hazardous to health. Contact fungicides also must be used more frequently than metalaxyl. The fact that China is committed to protecting the environment and reducing adverse effects associated with the use of agrochemicals makes this a highly unattractive scenario.

*Derived from reports posted by the Global Initiative on Late Blight (GILB), which maintains a website with reports from researchers in 78 countries. For more information please visit <http://www.cipotato.org/gilb>*



## POTATOES: A NORTH KOREAN OBSESSION

Although he has no training in agriculture, North Korean leader Kim Jong Il is said to be obsessed with potatoes, spending weeks at a time providing guidance to his nation's farmers.

According to reports broadcast by CNN, Kim is convinced that improved potato varieties will one day solve his country's food problems. In fact, he is so certain of the importance that potatoes will play in feeding his country that he once opened a restricted facility to international inspection in exchange for technical assistance that would aid Korea's potato farmers.

According to FAO, potato production in North Korea has increased more than four-fold since 1995, mainly through area expansion, and potatoes now rank third in importance after rice and maize. Today, North Korea produces potatoes on nearly 200,000 hectares with yields that average 9 tons per hectare. In neighboring China yields are, on average, 40 percent higher.

CIP has worked intermittently with North Korea since 1993, when diplomats visited Center

headquarters in Lima and returned home with new potato varieties and large quantities of CIP publications. Collaboration increased 5 years later when CIP seed specialist Rolando Cabello visited the country. "I have never seen that kind of poverty or hunger even in the poorest communities in the Peruvian highlands," says Cabello, a Peruvian national.

CIP will provide every assistance that it can to aid North Korea's people," adds Roger Cortbaoui, CIP Director for International Cooperation. "In the months ahead we will be working to produce starter seed of improved varieties under a grant provided by the Common Fund for Commodities. In addition, we hope to reduce storage losses by introducing improved management practices and training people in their use."

The new CIP-China Center, Cortbaoui notes, will also provide much needed technical assistance to North Korea and will help to speed up the introduction of potatoes adapted to local conditions.

CIP SCIENTISTS, SUCH AS SEED SPECIALIST FERNANDO EZETA, ARE WORKING WITH COLLEAGUES IN CHINA TO EXPLORE NEEDS AND OPPORTUNITIES FOR THE NEW CENTER.



sweetpotato because the disease pathogens are not prevalent there.” Such diseases, Zhang notes, represent serious constraints in China and other Asian countries where sweetpotato production is becoming increasingly important. Similarly, CIP potato breeders cannot test their most promising potato lines under the long-day conditions that typify places like Afghanistan and the new republics of Central and Western Asia.

The new Center will not only help to resolve these problems, it will also provide a platform for upgrading biotechnology research on root and tuber crops and for training large numbers of Asian researchers in the use of molecular marker technology and other genomic tools. “One of our

most important goals for the Center is to work with China, where there is extensive experience in biotechnology, to build the capacity of Asian national research programs to use transgenic root and tuber crops safely and responsibly,” Zhang says.

#### **A CENTER FOR THE REGION**

By design, the benefits of the CIP-Asia Center are slated to extend beyond China, reaching many neighboring countries. “Our Chinese collaborators expect the Center will serve as a regional platform for research and development, building upon China’s reputation for hard work, innovation, and impact while extending the benefits of an accelerated program of international cooperation to many of the country’s neighbors,” says Roger Cortbaoui, CIP Director for International Cooperation.

Current plans call for the establishment of a chain of research stations in the country’s major potato- and sweetpotato-producing areas. The stations will allow researchers to test new breeding lines and management techniques in climates and conditions that are representative of Asia’s predominant agro-ecologies. “The Government of China,” Cortbaoui notes, “is eager to see CIP’s capability to contribute to the region

strengthened, and to facilitate this it will provide the Center with field, laboratory, and office facilities, as well as funding for in-country operations." Chinese researchers are also expected to play a major role in the Center's regional research and training activities.

The Center's annual operating budget, including the work at its ecoregional substations, is estimated at US\$2.0 million, a quarter of which is slated for training and information activities. "We cannot emphasize strongly enough the importance of training and information, especially long-distance training using the Internet, video conferencing, and other forms of electronic technology," Cortbaoui says. "Asia is a big place and we will be relying on electronic communication to get information quickly and efficiently to where it is needed most." Thus far, Cambodia, Indonesia, Korea, Laos, Myanmar, Thailand and Vietnam have expressed interest in the Center, as have Australia and Austria.

#### **A TRADITION OF COOPERATION**

Although informal contacts had been established in the 1970s, formal cooperation with China began in 1985 when CIP became the first Future

Harvest Center to open a scientific liaison office in Beijing.

In 1978 China—which had once been entirely dependent on potatoes supplied by the Soviet block—received a disease-resistant potato from CIP that it subsequently named CIP-24. Although



THE NEW CENTER WILL ENABLE PLANT BREEDERS TO SPEED UP THE SUPPLY OF NEW POTATO VARIETIES TO CHINA AND NEIGHBORING COUNTRIES, WHERE THE DEMAND IS HIGH (BELOW AND PREVIOUS PAGE).



CIP-24 has since been surpassed by more modern varieties, it was considered highly successful in its day and continues to be grown on 70,000 hectares, principally in the country's drought-prone northern provinces. A more recent success story is Cooperation 88, an exceptionally high yielding potato with outstanding processing

characteristics that is grown in Burma, China, and Vietnam (see CIP Annual Report 2001).

"The expectation is that the creation of the new Center will lead to many more success stories, and will multiply the effect of past achievements in China and throughout the region," Cortbaoui adds. "With the new Center we will be moving significantly beyond what is possible to achieve at the present liaison-office level." Once the Center is up and running, CIP plans to station most of its Asia-based staff in China and relocate additional staff from Lima, bringing together plant geneticists, seed specialists, pest control experts, and social scientists.

**CIP SCIENTIST WINS AWARD FOR WORK IN CHINA**

In November 2002, virologist Luis Salazar, head of CIP's Crop Protection Department, was presented with the prestigious Qilu Friendship Award by the Government of Shandong, China, for his contribution to the development of pathogen detection technology in the province. This technology has helped to eliminate virus disease in sweetpotato planting material in Shandong and neighboring provinces, and forms the basis for the largest economic impact in CIP's history. The value of this technology to date is estimated at well over US\$550 million.

Salazar, who has been helping establish the Virus-Free Seed Production program in Shandong since 1985, was chosen for the prize from a list of 2000 nominees from all parts of the world. He was nominated for the award by the Shandong Academy of Agricultural Sciences (SAAS), which five years ago named him Principal Scientific Advisor for the same research.

China is the world's largest producer of root and tuber crops. Sweetpotato farmers are now planting an estimated 330,000 hectares of virus-free sweetpotato annually in Shandong Province alone, according to recent reports.