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BIOGRAPHY OF YUAN LONGPING

Yuan Longping was born on September 7, 1930, in Beijing to a family with a revered tradition of civil service. On his father's side, he traces his roots to De'an County, Jiangxi Province, in south central China. His paternal grandfather was a senator of the Jiangxi provincial government. His father became a civil servant himself, serving as a secretary at a railway bureau.

From his mother's family, Yuan inherited the virtue of hard work. His maternal grandfather, a textile factory worker, died early, leaving his wife to fend for their two young daughters. Because of poverty, Yuan's maternal grandmother sent the girls to a Christian missionary school that offered free tuition. There, Yuan's mother learned English at the high school. Later, she became an elementary school teacher and taught her son English. A Christian, she occasionally took Yuan to church with her and taught him the virtue of serving others. Today, Yuan credits his mother for having been a great influence in his life.

Yuan, the second of five brothers, entered his first formal school, the Fulun Primary School in Hankou, Hubei, in 1936. It was only one of seven or eight primary and middle schools he would attend as a consequence of his father's work and China's anti-Japanese war. When the Japanese invaded China in 1937, Yuan's family was forced to move from Beijing to Hankou, and finally to Chongqing, where the Nationalist government (Kuomintang, or Guomindang) under Jiang Jieshi (Chiang Kai-shek) established its wartime capital. Although he was very young at the time, Yuan has memories of Japanese planes flying very low over the city, dropping numerous bombs and killing many Chinese.

There was no railway system in Chongqing and Yuan's father lost his railway job. Fortunately, a two-star general of the Kuomintang's Second Army Group, Sun Lianzhong, hired him as a secretary. The two had met when Yuan's father was still employed at the railway bureau. Yuan's father often assisted the general in transporting ammunition and other materiel by train. It was through Sun Lianzhong's help that Yuan's family was able to survive the war.

The family returned to Wuhan after the anti-Japanese war, and life returned to normal as Yuan's father resumed his work at the railway bureau. In Wuhan, Yuan attended the Bo Xue middle school, which was run by the same London missionary association that operated the boarding school he had gone to in Chongqing. After some time, Yuan's family moved to Nanjing, and there Yuan went to a high school attached to China Central University.

At school, Yuan was given the monicker "Questioning Student" for having an inquisitive and critical mind. He was a serious student who displayed "all-around development of morality, intelligence and physique with excellent schoolwork"—as he remembers one teacher telling his parents.

His interest in plants manifested itself early. When he was only six or seven years old, he recalls, his teacher took him and his classmates to a garden. He was deeply impressed by the sight of a peach tree laden with fruit; it reminded him of a scene from a Charlie Chaplin movie he had seen. It seemed to him that being a farmer or an agricultural scientist would be the best job in the world. Then and there, he resolved to study agriculture some day.

Yuan was in high school in Nanjing when the People's Liberation Army (PLA) captured the city on April 26, 1949. It marked the collapse of Jiang Jieshi's Nationalist government. On October 1, 1949, Mao Zedong, chairman of the Communist Party of China (CPC), proclaimed the establishment of the People's Republic of China in Beijing.

In 1949, Yuan completed his high school courses and entered Southwestern Agricultural College in Chongqing. His major was agronomy. It was the fulfillment of his childhood dream, and it marked the beginning of his lifelong work in agriculture.

Yuan's college education, however, was marked by communist indoctrination. The students were made to abandon the study of English in favor of Russian. In their plant-breeding and genetics courses, they were taught the theories of Soviet Union scientists such as the horticulturalist Ivan Michurin and the agronomist and botanist Trofim Lysenko. Students did not dare openly study the theories of Western geneticists, such as Gregor Mendel and Thomas Hunt Morgan, for fear of being criticized as slaves of foreigners.

Mendel was an Austrian monk who first discovered the basic laws of heredity (the principles of segregation and independent assortment, and the law of dominance) and suggested the existence of genes. Morgan was an American zoologist who was awarded the 1933 Nobel Prize for Physiology or Medicine for his work in the field of genetics. In 1915, he postulated the chromosome theory of heredity, which states that genes, the individual units of heredity, are arranged in a line on the chromosomes. Morgan also modified Mendel's law of independent assortment (that characteristics are inherited independently of each other) when he discovered "linkage," or the inheritance of two or more "linked" genes situated near each other on the same chromosome.

Upon his graduation from Southwestern Agricultural College in 1953, Yuan took a teaching job at the Anjiang Agricultural School in Hunan Province. He taught Russian, botany, crop cultivation, breeding, and genetics. He impressed many students with his vivid teaching style and his ability to explain complex ideas in simple terms. It was in one of his classes that he met and won the heart of his future wife, Deng Zhe—by playing the violin for her. They were married in 1964, five years after Deng Zhe graduated from the school. She was assigned to work at the Bureau of Agriculture in Qianyang County. At the time of his marriage, Yuan was thirty-four years old.

While teaching, Yuan also conducted scientific experiments involving asexual crossings between crops, using the Russian theories he had learned at college. Soon, however, he realized the faults of the Russian models and sought to retool his methodology. By secretly reading Western magazines such as *Crop Science*, Yuan managed to learn an approach to science that was different from the theories he had learned at college. He would later confess that Lysenko and his ideology-driven theories "wasted my useful time. When I was young and strong, I believed his theories."

The Hundred Flowers Campaign initiated by Mao Zedong and the CPC in 1956 also aided Yuan's learning. That development encouraged free discussion and inquiry among intellectuals. It was a departure from the party's thought-reform campaigns of the early 1950s, which had involved reeducating teachers and scientists and discrediting Western-oriented scholarship. The campaign explicitly intended to prove the superiority of Marxist-Leninist ideology and to hasten the conversion of Chinese intellectuals to communism. The Hundred Flowers Campaign enabled scientists to buy books from foreign sources and allowed Yuan to advance his knowledge of crop breeding.The disastrous famine in China from 1958 to 1961 led Yuan to focus his research on the development of high-yielding rice. By then, he had given up his experiments on asexual crossing and begun using artificial hybridization to develop new rice varieties. Observing the results of hybridization in corn, Yuan developed the novel idea of utilizing hybrids to increase rice

yield. Hybrids are the product of the crossing of two genetically different inbred varieties of a particular crop. Hybridization unleashes the power of heterosis, the dramatic growth spurt that follows the crossing of genetically distant parent plants. The "heterosis effect," however, disappears after the first generation, or F1, making it pointless for farmers to save seeds produced from a hybrid crop.

Until Yuan began his experiments, rice had been considered a poor candidate for commercial hybridization. Rice is a self-pollinating crop. Each floret bears only a single seed, and each seed is fertilized by pollen produced by the rice plant itself. This self-pollinating property of rice was thought to greatly limit its out-crossing rate, since significant cross-pollination occurs only when the rice line is "male sterile" (MS), that is, unable to pollinate itself. This seemed to foreclose the possibility of producing hybrid rice seeds on a mass scale. Private firms were therefore reluctant to enter the hybrid-rice seed business. But Yuan decided to pursue the idea. In 1961, he discovered a natural hybrid rice plant with big panicles, heavy grains, and strong stems, with a 50 percent higher yield than common rice varieties. Three years later, with support from the Chinese government, including a countrywide team of staff researchers, he launched a major experiment.

Breeding techniques at the time were extremely laborious. But by advancing methodically, Yuan was able to develop a technique for increasing the output of hybrid seeds. This involved breeding a special "male sterile" (MS) rice line that had no functional pollen but possessed normal pistils—hence, it could be pollinated but could not pollinate itself. By planting rows of this sterile line alternately alongside rows of pollen-bearing rice in a seed plot, he found he could produce large quantities of first-generation (F1) hybrid seeds. This was his first major breakthrough.

In 1966, Yuan presented these findings in a seminal paper titled "A Preliminary Report on Male Sterility in Rice." Published in the *Chinese Science Bulletin*, this paper is considered the foundation of hybrid rice research. It caught the attention of a reader at China's State Science and Technology Commission (under the Ministry of Science and Technology), who wrote to the Bureau of Science and Technology of Hunan Province requesting additional support for Yuan's study.

The next big breakthrough, the discovery of a *natural* male sterile rice plant, came serendipitously. During 1966–1976, the Great Proletarian Cultural Revolution occurred in China. The atmosphere of free discussion and criticism engendered by the Hundred Flowers Campaign was gone. Intellectuals who dared to voice different opinions were branded as rightists and counterrevolutionaries. They were quickly purged from their positions; many were sent to labor on farms in the countryside.

Mao himself laid down the "eight-word constitution" on agriculture: water, fertilizer, land, seed, density, protection, labor, and management. Yuan added another word to Mao's formula: time. Some politicians were outraged. They seized Yuan's experimental seedlings and threw them into a well. Yuan told his wife, "You should be psychologically prepared for this. I might be brought on stage to be criticized and denounced. I might even have to stay in the cowshed." Deng Zhe gave him steadfast support. She told Yuan, "The most they can do is expel us both. You go serve as a peasant and I will go with you. As long as we have land, we can still make our hybrid rice a success."

Encouraged by his wife, Yuan decided to move his research elsewhere, away from the attention of politicians. He also wanted to avoid having to take sides and being distracted from his research. With two assistants, he transferred his work from Hunan to Hainan Island and Yunnan Province.

It was on Hainan Island in 1970, while on a routine collecting trip, that one of Yuan's assistants found a natural male sterile wild-rice plant, meaning wild rice with flowers

containing no pollen. The plant was named "wild rice with abortive pollen," or WA. This promising discovery led to rapid progress in the development of hybrid rice; consequently, in 1972, China's State Science and Technology Commission listed hybrid rice as a key national research project. The Chinese Academy of Agricultural Sciences and the Hunan Academy of Agricultural Sciences formed a nationwide research network through which Yuan and other breeders crossed nearly a thousand varieties of rice with WA, to determine whether its male sterility could be passed on to subsequent generations. Those that came out sterile in their hybrids were called maintainer lines. Yuan and his fellow researchers repeatedly backcrossed the maintainer lines until a stable sterile line was produced. This was called the "cytoplasmic male sterile" (CMS) line and used as one of the parental lines for producing hybrid seeds. The other parental line was called the restorer line because it restored fertility to the CMS line after crossing. In 1973, Yuan and his collaborators were able to screen out the first group of restorer lines. The seeds produced by crossing the CMS line and the restorer line—in a system called "three-line hybridization" (referring to the sterile, maintainer, and restorer lines)—were the first hybrid rice seeds widely sown by China's farmers. In 1974, Yuan used the "three-line" system to develop the world's first commercial hybrid rice variety, "Nanyou 2." By 1975, he had basically perfected the hybrid seed-production technology.

When news of his work with hybrid rice began to leak out to Western scientific circles, many were skeptical. They did not believe that rice heterosis could be achieved. Even the International Rice Research Institute (IRRI) in the Philippines, which had tried hybrid rice research before 1962 but eventually gave up, did not believe that great possibilities existed with hybrid rice. In 1979, however, Yuan introduced Chinese hybrid rice to the world in an international conference sponsored by IRRI. The conference ended with the participants acknowledging the pioneering efforts of China, and of Yuan Longping in particular, in hybrid rice research. The following year, IRRI restored its own hybrid rice research.

Governmental support was crucial to the success of Yuan's endeavor. In 1975, the Chinese government granted his team eight million renminbi (equivalent to nearly U.S.$5 million at the time) to accelerate the expansion of hybrid rice. The grant enabled Yuan to produce hybrid rice seeds on a large scale in Hainan. Since then, the Chinese government has continued to support research to expand commercial hybrid rice production. Today, every county in China has its own state-owned seed company that produces hybrid rice seeds. It is from these companies that ordinary Chinese farmers buy the seeds needed for cultivation.

After the breakthroughs of the 1970s, Yuan devoted himself to advancing and improving hybrid rice technology and to sharing his discoveries with the rest of the world. In 1987, he was assigned to lead a national research program to develop a "two-line" hybrid rice system, that is, a system that would not require a maintainer line. Nine years later, academicians from the Chinese Academy of Sciences and the Chinese Academy of Engineering deemed the project a success. Yuan's two-line hybrids proved to exceed the yield of the three-line hybrids by about 5 to 10 percent. At present, some 2.5 million hectares of rice land in China are planted to two-line hybrid rice.

This achievement reflects Yuan's ongoing efforts to simplify hybrid methodologies and to increase the yield level of hybrid rice. In recent years, he has carried out much of his work as director general of the China National Hybrid Rice Research and Development Center in Hunan Province, which was established in 1995 through a generous grant of ten million renminbi from the Premier Fund. When addressing other scientists at international meetings, Yuan always stresses the collaborative nature of this research. In recent years, he and his team have been working on the next generation of rice hybrids, a super-hybrid

rice. They have succeeded in creating varieties that yield 2.25 tons more per hectare than other existing commercial rice hybrids.

Notwithstanding these successes, some key issues remain. An important one is the quality of rice. Some critics contend that the grain quality of hybrid rice is inferior to that of pure rice varieties. S. S. Virmani, plant breeder and deputy head of IRRI's Plant Breeding, Genetics, and Biochemistry Division, explains that the rice quality issue is "both true and not true." He elaborates: "Technically, there is no reason that hybrid rice should be of low quality. Normally, in the beginning, breeders did not pay attention to quality because they focused on yield." Having proven the high-yield possibilities of hybrid rice, Yuan and his team worked to improve the quality of rice in response to increasing demand and in anticipation of China's entry into the World Trade Organization (WTO) in December 2001.

When asked to comment on this issue, Yuan asserts that "the grain quality of our super-hybrid rice is [now] very good. It's tastier and more fragrant." He likes to tell about the day in December 1999 when a mayor from Guangdong Province visited him. The mayor was looking for a high-yield rice variety of good grain quality. Yuan told the mayor he had what he wanted and invited him to dinner that evening so that the mayor could taste his super-hybrid rice. The mayor, Yuan says, ate four bowls of rice for the first time in his life. Two days later, a group of correspondents from Hong Kong and Macau arrived at the institute, also to look into the super-hybrid rice. When told about the mayor's amazing appetite for the rice, five young women from Hong Kong expressed disbelief. Again, Yuan invited them to dinner so that he could serve them the super-hybrid rice. The disbelieving correspondents from Hong Kong found it very good and, like the mayor, consumed four bowls of rice each.

Another issue is replicability. Yuan's early hybrid varieties proved unsuitable in certain tropical situations; one test crop in the Philippine province of Laguna was high yielding but suffered badly from pests and diseases, for example. Within China itself, farmers in some regions preferred early maturing rice that could be harvested ten to fifteen days earlier. Others discovered that hybrid varieties were ill-suited to the topography of their regions. To address these concerns, Yuan emphasized the development of restorer and male sterile lines with a broad spectrum of compatibility, so that they could be adapted to a variety of different ecological environments. To foster this work, his center operates branch institutes in several of China's ecological zones. In this way, Yuan and his team have developed more than ten hybrid rice varieties for large-scale commercial production.

The significance of Yuan's work in hybrid rice production cannot be overestimated, especially in China, the most populous country in the world. On June 27, 1981, the Eleventh Plenum of the Central Committee of the Chinese Communist Party passed during its sixth plenary session a document titled "Resolution on Some Historical Problems of the Party since the Foundation of Our Country." The document listed the development and extension of hybrid rice as one of the most important achievements of China in science and technology, together with the hydrogen bomb. Indeed, the development of hybrid rice has enhanced food security in China. Where there used to be perennial food shortages, Yuan claims that there is now overproduction. About 15.5 million hectares of land, constituting half of China's rice-growing area, has been planted to hybrid rice. This constitutes 57 percent of the total rice production in China. The average yield for hybrid rice is 6.8 tons per hectare, as against 5.3 tons for rice inbreds. From 1976 to 1999, the cumulative area planted to hybrid rice grew to 25.6 million hectares, achieving a total increase in grain production of 380 million tons.

These figures assume even more significance if one considers the future needs of the ever-growing Chinese population. Estimates show that by 2010, China will have a

population of 1.4 billion and will need 50 million more tons of food. Since arable land is limited, the only solution is to raise the yield of rice per unit area. Through multilocation trials in China, Yuan's super-hybrid rice has been shown to have around 20 percent yield advantage over present hybrids. Compared with rice inbred varieties, super-hybrids possess more than 40 percent yield advantage.

Yuan is optimistic that super-hybrid rice will meet China's future needs. "There is no limit to the development of science," he says. "Rice yield can be constantly lifted to a new high level with the application and progress of breeding science. I have a strong faith that the Chinese not only can feed themselves by their own effort with the progress of science and advanced technology but also help other developing countries to solve their food problems."

The use of hybrid rice has also contributed to the reduction of the land area planted to rice and the subsequent diversification of crops. Before the release of hybrid rice in the 1970s, China's rice-planting area was about 36 million hectares. In the 1990s, this area was reduced to 31 million hectares. About 5 million hectares of land had been shifted to the cultivation of other crops such as vegetables, fruits, cotton, and rapeseed or to other more profitable enterprises, including industrial ones. Reverend Jane Yao, a church leader of the Christian Council working with ethnic-minority farmers, observed this process in western Hunan Province; farmers there told her that they doubled their yields after switching to new hybrid seeds. The surplus freed them to plant soy beans in alternate planting seasons.

The diminished size of China's "rice area" has not translated into a reduction in output. In fact, rice production has increased by 47.5 percent since the 1970s. The establishment of seed production companies has also created jobs in the countryside, particularly among women, and has helped to improve the standard of living in rural areas.

Yuan's research has not benefited China alone. One of his lifelong wishes is for his work to benefit people worldwide because he believes that the fruits of his research are the property of the entire human society. When he made his discoveries, he did not hesitate to share his data with other rice breeders and research institutions all over China. Moreover, from 1980 to 2000, Yuan and his colleagues trained more than 350 scientists from twenty-five countries of Asia, Africa, and South America in hybrid rice technology at the China National Hybrid Rice Research and Development Center. The center has conducted twelve international hybrid-rice training courses and three international symposia on hybrid rice.

As principal counselor of the United Nations Food and Agriculture Organization (FAO), Yuan visited India, Vietnam, and Myanmar to help develop hybrid rice. Today, his hybrids are planted on two hundred thousand hectares of land in Vietnam and one hundred fifty thousand hectares in India. Bangladesh and Myanmar are poised to follow suit in the very near future. The FAO has also published and distributed his book, *The Technology of Hybrid Rice Production* (1995). Yuan continues to work with IRRI scientists and has served as a visiting scientist and consultant in cooperative researches with the institution.

In the Philippines, hybrid rice was introduced through a government agreement between the Philippines and China. Yuan himself has visited the Philippines twenty-three times. His assistants are now helping a Philippine company, SL Agritech Corporation, to establish a 510-million-peso research and production facility that will produce and supply hybrid rice seeds. A basic laboratory and rice farm have been set up in Laguna Province, where a forty-hectare crossbreeding site supplies material for a two-thousand-hectare seed-growing farm. This farm, in turn, can produce 4,987 metric tons of hybrid rice seeds. It is estimated that the special hybrid rice seeds can yield around three tons more grain per hectare than local rice inbreds. The Philippine government also purchased sixty tons of hybrid rice seeds that were planted in the province of Isabela.

Yuan's contributions have earned for him the title of Father of Hybrid Rice. He has won numerous accolades in and outside China. In 1981, he won the first special-class National Invention Prize in Beijing. In 1987, he was awarded the United Nations Educational, Scientific, and Cultural Organization (Unesco) Science Prize in recognition of his outstanding contributions in the field of science and technology for development. In 1999, he was named outstanding scientist by China's Ministry of Science and Technology and Ministry of Personnel. In January 2001, China honored him with its highest award, the Supreme State Science and Technology Award, in recognition of his efforts in advancing his country's economic and social development.

Yuan's achievements have also been widely recognized abroad. In 1995, the FAO awarded him the World Food Security and Sustainability Medal. He was hailed as a "distinguished pioneer scientist in heterosis" in the International Symposium on Genetics and Exploitation of Heterosis in Crops, held in Mexico in 1997. Other awards from abroad have included the Fukui International Koshihikari Rice Prize from Japan, the Alan Shawn Feinstein World Hunger Award for research and education from Brown University in the United States, and London's Rank Prize for Agronomy and Nutrition.

Today, private companies in China earn millions of renminbi from the sale of hybrid rice seeds. This is why people ask: Why doesn't Yuan patent his seeds and become one of the world's richest men? To that, his simple answer is: "I have not thought much about this. I welcome anybody who wants to grow this stuff, the more the better." Even so, there does exist a rice-seed company called the Yuan Longping Agricultural High-Tech Company. It engages primarily in the production and sale of hybrid rice seeds and other plant seeds as well as in processing farm produce and exporting and importing agro-technology. It is the only company listed on the Shenzhen and Shanghai Stock Exchanges that is named after an actual person. The company is largely government-held but Yuan owns a 5 percent stake, amounting to 2.5 million shares. On paper, he is a very wealthy man. But Yuan denies that he has profited from lending his name to a publicly listed corporation and explains that the stock-market listing was a move to facilitate China's entry into the WTO. He donates his earnings to the Yuan Longping Hybrid Rice Award Foundation, which recognizes contributions to agriculture and funds ongoing research at the China National Hybrid Rice Research and Development Center.

Besides being the director general of the China National Hybrid Rice Research and Development Center, Yuan holds (or has held) various other positions. He has been a member of the Standing Committee of the Chinese People's Political Consultative Conference (CPPCC), vice-chairman of the Hunan Provincial Committee of CPPCC, vice-chairman of China's Society of Crop Science, vice-chairman of the National Expert and Consultant Group for Field Crop Production of the Ministry of Agriculture, senior plant breeder of the Hunan Academy of Agricultural Sciences, and professor at the Hunan Agricultural University.

Despite his high profile, illustrious career, and renown as an accomplished scientist, Yuan remains an ordinary person to the people who know him best—his family, friends, and comrades. His life consists of simple joys. These include recreational activities, especially swimming. As a student, he won fourth place in a swimming competition. Yuan, who has been called "the white within the waves," manages to squeeze in time for daily swimming in his hectic workday.

Yuan also spends much time on two well-loved hobbies: reading books and listening to music. Every night, he reads for at least half an hour before going to bed. A multitalented man, he also plays the violin. Deng Zhe often accompanies him on the organ. Their marriage, which has produced three children, has lasted nearly four decades. Deng Zhe is proud of

her husband but is not awed by his celebrity status. To her he remains an ordinary person with a fine sense of humor and a childlike innocence.

Yuan enjoys simple food and likes to cook for himself. His usual fare consists of peanuts before meals, light food, and tea. He keeps a rigorous work schedule that begins after breakfast at 7:30 in the morning and does not end until 1:00 the following morning. He naps briefly at noon in a room sparsely furnished with a simple bed and two bamboo chairs. He goes to the field twice a day, making sure he is there from sowing time till reaping time. He sees no need for a bodyguard and, when cautioned against being kidnapped, says he is not afraid: "I don't care much about reputation and money. I have enough money and can live comfortably." After dinner, he shares his rest period with his team, usually by watching CCTV News and playing Chinese chess or mahjong.

Yuan speaks English fluently and never takes an interpreter along on his travels abroad. Because of his simple appearance, there are those who mistake him for a farmer when they meet him in the streets. Yuan does not mind. He says, "I grew up in Chongqing, which was once an important city of the Nationalist government. It was even busier than Shanghai. But I am living with the peasants now. If I dress like somebody from the city, they will feel unacquainted with me and will not open their hearts to me. The farmers in our country have a very rich experience on how to grow paddy rice. I have a lot to learn from them. Besides, when you are very well-dressed, how can you go to the field?" Indeed, Yuan may be China's most famous scientist, but he prefers to be called "a farmer."

Yuan believes his work with farmers lies at the core of his success as a scientist. Instead of isolating himself within the controlled environment of a laboratory, he strives to put theories into practice by observing actual farming activities and techniques. He spends 90 percent of his working hours out in the field. He makes himself approachable to farmers, talking to them to see how crops develop and working with them to promote new seeds. Farmers admire him for his humility, amiability, and kindheartedness. The farmers' children even call him "Grandpa." An anecdote illustrates the farmers' reverence for Yuan:

> *In Hunan, there is an ordinary farmer by the name of Cao Hongqiu. He and the people in his village were able to live a very good life because of the invention of hybrid rice by Yuan Longping. Therefore, he used nearly 50,000 yuan, which was his savings from several years of hard work, and asked somebody to carve a life-sized statue of Yuan Longping using white marble. He even had a red silk draped over its shoulder and flower pinned on its breast. Upon completion of this statue, the people in his village lit up firecrackers, did the* yanko *dance, and even placed peaches and fruits, which symbolized long life and blessings, before the statue. They pay respect to it every day.*

Yuan is driven by a deep humane concern to improve the lives of people worldwide through food security and has devoted a lifetime to the improvement of agriculture around the world. He wants to develop technology that will lead to a new revolution in rice crops. One day, he hopes, new super-hybrids will feed much more of the world's population, especially in developing countries. "Every year," he says, we can "increase our grain output by 40 million tons. That means we can feed 100 million more people."

Edwin Joseph Judd, United Nations Children's Fund (Unicef) area representative for China and Mongolia, describes Yuan as "one of the staunch, hardworking driving forces who has become well-known by the sheer force of his professional dedication, and by being well-spoken of in a society that is careful about who gets credit." The FAO

representative in China, Omar Salah Ahmed, calls Yuan an "international person," no longer just a citizen of China. His professional integrity has made him a role model for the youth, whom he encourages to grow in an atmosphere of inquiry and passion. Through his work, Yuan Longping has earned the respect and admiration of his peers and the love of his people—truly a robust harvest of a full and well-spent life.

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REFERENCES

Kuyek, Devlin, et al. *Hybrid Rice in Asia: An Unfolding Threat.* Barcelona: Grain, March 2000. http://www.grain.org/briefings/?id=136.

"Seed Scientist Watches Stock Savings Bloom," *China Daily*, December 13, 2000.

"'Super Rice' Soars in Shenzhen," *Panorama English*, December 13, 2000.

Virmani, S. S. "Hybrid Rice," *Advances in Agronomy* 57 (1996):377–462.

Yuan Longping. "Hybrid Rice Breeding for Super High Yield," *Hybrid Rice* 12, no. 67 (1997):4–6.

_____. Interview by James R. Rush. Tape recording. Ramon Magsaysay Award Foundation, Manila, August 31, 2001.

_____. *The Technology of Hybrid Rice Production*. Rome: United Nations Food and Agriculture Organization, 1995.

Yuan Longping. Changsha: China National Hybrid Rice Research and Development Center, 1999.

Various interviews and correspondence with individuals familiar with Yuan Longping and his work; other primary documents.