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SPECIAL ISSUES

National S&T Drive for Better Health

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To boost people's health through S&T activities, an S&T summit, co-sponsored by 14 government agencies, including the Ministry of Science and Technology and the Ministry of Health, was held on April 10, 2008 at the Great Hall of the People. LIU Yandong, a Chinese State Councilor, made an important speech at the opening ceremony. WAN Gang, Science and Technology Minister, and CHEN Zhu, Health Minister, also spoke at the meeting. Heads of 14 sponsoring government agencies, and some 300 participants from health, S&T, and industrial communities, and from universities, were present at the event.
Under a theme of "leading a scientific life, and being both healthy and happy", the national drive will work on a range of missions, including placing more weight of health activities on grassroots people, improving the innovation capacity of health activities, enhancing diffusion and application of proven findings, and building China into a large health power. Under the guiding principle of focusing on people, proprietary and integrated innovations, and enhanced diffusion, some ten S&T projects will be launched to work on diseases prevention and control, food and drug safety, new drugs, and localization of medical instruments, during the 11th Five-year period (2006-2010). After the opening ceremony, a health forum was held to discuss cancer prevention, diagnosis, treatment, and associated drug development.

Enhanced Seismic Monitoring Capability

Digital seismological observation network, a largest earthquake prevention and disaster preparedness project that has consumed a budget worth RMB 2.28 billion in the country, has recently passed an approval check. The event marks China's escalated status in earthquake prevention and disaster preparedness.

Launched in June 2004, the project is made up of 6 components, or three networks and three systems, including a precursor network, a digital earthquake measuring network, a digital strong earthquake network, a fault detecting system, an earthquake emergency

commanding system, and an earthquake information system. The implementation of the project has filled up the blanks in seismic watch, with an enhanced and digitized observation capability, and a data sharing platform.

According to a briefing, digital process is the core of the project, with a real time data sharing network for monitoring, prediction, and disaster preparedness. It has greatly enhanced the density of earthquake watch stations in the country, and optimized their distributions, with 0.4 precursor earthquake, 0.88 earthquake, and 1.2 strong earthquakes for per 10,000 square kilometer, 95% of the monitoring equipment being digitized, a shortened quick report time from 30 minutes to 10 minutes, and an improved lower limit magnitude from 4.5 to 2.5.

INTERNATIONAL COOPERATION

Three Decades Cooperation Harvests

April 15, 2008 marked the 30th anniversary of an S&T cooperation accord signed between China and Germany. At a ceremony jointly held by both Chinese Ministry of Science and Technology, and German Federal Ministry of Education and Research, to celebrate the event, WAN Gang, Chinese Minister of Science and Technology told the audiences that the three-decade cooperation between China and Germany has produced numerous eye-catching findings in a string of fields, including environment, ecology, earth science, marine study, aeronautics, protection of cultural relics, optic technologies, micro-systems, information technology, and health. In recent years, climate change, energy, and environment have become hot cooperation fields between the two countries. Both China and Germany have shared a fine ground for S&T cooperation. The cooperation has entered a new historical period. Dr. Annette Schavan, Federal Minister of Education and Research, said that China is a very important S&T cooperation partner of Germany in Asia. Cooperation between the two countries has a long history, and will continue its course.

Joint Sheep Gene Studies

New Zealand Minister of Research, and Science & Technology announced on April 17, 2008 in Beijing that three universities, including Massey University, Peking University, and Shihezi University will work together to identify genetic markers relating to sheep's unseasonal reproduction. New Zealand hopes to enhance its sheep reproduction activities using the genetic markers found in Chinese sheep, boosting the economic benefits of sheep reproduction system. New Zealand has more than 40 million sheep in stock. Unfortunately, its sheep present narrow genetic lines, as most sheep bred in the country are originated from Europe. Sheep bred in the middle part of Asia have unveiled more diversity in genes. According to an accord, a sheep reproduction center will be established before 2015 at Shihezi University in Xinjiang, mainly working on genetic markers. Shihezi University will send its researchers to work on doctoral study of genetic markers at Massey University.

RESEARCH AND DEVELOPMENT

China's Digital Farming

With the support of National 863 Program, China has landed an array of important findings or accomplishments in the area of digital farming, including biological and environmental information collection and interpretation, digital agricultural process model, soil sensor and spectral sounding, pests and weeds identification, 3-D plant information collection, digital domestic animal raising, digital agricultural knowledge platform, wireless greenhouse control technology, digital food drying technique, fruit picking robot, and agrifood tracking system.

Digital farming activities have resulted in laudable accomplishments, including 43 patent applications, including 25 inventions, 23 software copyright grants, 26 software copyright applications, 14 novel products, 264 papers (of them, 47 have been collected by SCI/EI), 1 new species, 42 demonstration zones, and application of findings in 36 agrifood enterprises.

Environment Friendly Pesticides

Chinese Ministry of Science and Technology has established a project to produce more food with S&T means. The effort has rolled out numerous useful techniques to prevent and kill major pests attacking wheat, corn, and rice in the north, northeast, lower and middle reaches of the Yangtze River, and Chengdu Plains. Researchers have studied the mutations of pests, their reproduction habits, and spatial and temporal distributions, based on which, they worked out ecological regulating techniques to curb the spread of pests. For example, they treated corn blight using fermented bacteria, cured rice sheath blight using marine bacteria, evaluated wheat powdery mildew with mobile spore catchers, and diagnosed the disease using near-infrared spectrum.

More Results form Precision Agriculture

Precision agriculture is a goal defined by the National 863 Program, to develop generic technologies and products for vehicle based soil and plant information collection, precision crop management models and associated control and navigation techniques, farming machinery bus technology, and electronic unit control technology. Researchers have developed and tested a series of software and hardware for precision seeding, precision fertilizer application, and precision pesticides application. Meanwhile, they have established an integrated platform for precision agriculture, and launched demonstrations for the purpose, with major innovations in four areas, including key precision farming techniques, major precision farming equipment, integration and demonstration of precision agriculture, and precision farming diffusion activities.

Derived from the efforts are 39 patent applications (including 21 inventions), 18 software copyright applications, 4 new species applications, 10 precision agricultural products, and 135 papers. 39 institutions have become part of the efforts, and some 10 enterprises the developers and testers of the new technologies and products.

Coated Cells Live Longer

A study team, led by Prof. TANG Ruikang at Zhejiang University, has developed an approach to protect cells. Researchers demonstrated that the coated yeast cells could live longer under indoor temperatures, with a resistance to lysozyme. The new finding, creating a new approach for storing and shipping cells, has been published in a recent issue of journal *Applied Chemistry*.

TANG told reporters that it took only a few minutes to coat cells by bathing yeast cells coated with PA in a calcium phosphates liquid. PA would allow calcium phosphates to produce a layer on the surface of cells. The coated cells would become dormant, with a retained activity. This allows a cell to live longer, even with insufficient nutrition supply. It is also easy to de-coat the cells, using a weak acid liquid or ultrasound, to restore its normal functions.

Researchers have made an experiment to show that only 20% of the yeasts would survive after being placed under a normal temperature or in pure water for one month, while the coated yeasts would have a survival rate of 85%. In another experiment, researchers let the yeasts be attacked by its natural rival lysozyme. 80% of the normal yeasts would die three hours after being attacked, with less than 15% for the coated yeasts. In the meantime, the yeasts, wearing a coat mixed with magnetic nanoparticles, are able to move from one point to another.

Cosmic Engines Surprise XMM-Newton

Prof. WANG Junxian and others at the University of Science and Technology of China had spotted using XMM-Newton a rare type of galaxy, from which a higher number of X-rays than thought possible have been detected. The observation, giving a new insight into the powerful processes shaping galaxies during their formation and evolution, was published in an April issue of the *Astrophysical Journal Letters*.

A couple of years ago, researchers at the Center for Astrophysics, University of Science and Technology of China had found a rare type of quasars with a strong absorption capability. They ejected gases in a special direction. Prof. WANG and others accidentally discovered that these quasars show little X-ray emission, indicating that there is enough gas to absorb most of the X-rays given out from the region near the black hole. In a normal condition, the gases ejected would be a strong absorber of X-ray radiation. Computer simulations suggest that powerful radiation and magnetic fields present in the region eject some of gas from the gravitational clutches of the black hole, throwing it back into space. “Our results

can help refine the computer simulations of how these quasars work," says Wang.

NEWS BRIEFS

New Environmental Protection Standards

Not long ago, Chinese Ministry of Environmental Protection and General Administration of Quality Supervision, Inspection and Quarantine have jointly published four new national emission standards, including an interim coalbed gas emission standard, a living garbage landfill standard, an industrial pesticide wastewater standard, and a vehicle emission standard (phase III and IV in China). The four environmental protection related standards, the first of its kind published by the Chinese Ministry of Environmental Protection since it was upgraded from the former State Environmental Protection Administration, will be instrumental for raising China's emission control level, and enhancing a national system for such control.

China's Marine Satellite Covers Globe

According to a marine satellite report released on April 11, 2008 by State Oceanography Bureau, China's Marine I-B has worked smoothly in orbit, with a global coverage of sea color, sea water temperature, and marine environment.

Launched on April 11, 2007, the satellite was put into operation on September 30. It has been working smoothly to collect water color data and coastal images. As of December 31, 2007, the satellite has worked for 265 days, with 1371 probes, of which 522 for a probe over China's marine and land areas, 218 for night probes, 2 for carrier wave test, and 629 for overseas probes.