ForBio to Patent Commercially Important Tree Genes

ForBio, a specialist forest biotechnology company, is presently filing for provisional patents on 41 genetic sequences from eucalypts and pines. Of these 41 genetic sequences, 11 control fertility and flowering time whilst the remaining 30 are integral to the way a tree deals with various forms of stress such as salinity. These are thought to be the first tree genes patented in Australia from a gene discovery project. Part of ForBio’s gene discovery program is in collaboration with the US multinational company, Dupont, and its main focus is on eucalyptus.

ForBio’s main mission is to secure rights to genes of high commercial value in forestry. To date, ForBio has already sequenced about 10,000 genes from eucalypts and pines. It has a powerful position worldwide in the reproductive control of trees — one of the key areas governing commercial value of trees and vegetation. By inducing sterility in trees, it is possible to add “foreign genes” to the plant without the risk of gene escape through interbreeding with native trees. Incorporation of these genes will introduce the herbicide or insect resistance trait to trees. Also, with sterile trees, more energy can be diverted into making more wood. Isolating and transferring genes that promote early flowering can accelerate breeding, shortening the time between generations. This allows for quick and efficient improvement of forest performance, so as to meet the world’s timber and fiber needs.

Another pressing problem that the world faces is that of decreasing land quality. Most land areas in Australia and the other continents are affected by high salinity, heavy metal contamination, cold, drought, flooding and low nutrient soils. Control of the genes that allow plants to tolerate such forms of stress is economically important to ForBio. ForBio is also conducting a program to breed salt-tolerant trees, the first of which were planted in Australia’s Murray Darling Basin in 1998 and are growing well in saline soils.

The Changing Face of China’s Food Industry

China has the largest number of mouths to feed. As such, she is both a major producer and consumer of food and food ingredients. With China still a developing country, there is a large gap between her people’s demand for food-related products and her ability to satisfy this demand. However, in the past 20 years, China’s food industry has been growing at a steady pace, without showing any signs of slowing down. Food production processes have quickened from low-speed to high-speed, leading to an increase in employment.

In 1997, there were 51,000 food industrial enterprises employing a total of 5.58 million people, with a total national production of RMB531.79 billion (US$64.24 billion). This is in great contrast to 1978’s figure of RMB47.17 billion (US$5.7 billion). Since then, annual production has increased on the average by 10 percent. In these 20 years, China’s productions of rice, meat and flour top the world, while tea and sugar hold the second and fourth place respectively. Indeed, the Asia-Pacific Food Industry Business Report estimates that China’s domestic food industry would be worth US$119 billion by 2000. Figure 1 shows the significant increase in the production of four chief food products. Not surprisingly, exports have been growing in tandem with the increase in food production, contributing greatly to China’s financial income. The total tax and profit of the national food industry in 1997 reached RMB115.7 billion (US$14 billion), where tax accounted for almost 70 percent of the total worth at over RMB80 billion (US$9.68 billion).

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While the quantity of food products has risen, the quality has been improving too. China’s high economic growth rates have led to higher disposable incomes and living standards. Hence, demand for finished food products is on the rise, especially those with a Western flavor. The opening of China’s food market spurred a massive rise in food retailing. From a few thousand official shops in 1986, there are now more than 11 million food outlets. Moreover, many of the retail outlets are providing food items that were never available under the old controlled system.

In February 1993, to ensure that the people’s needs and demands are met, the State Council announced the ‘Program for Reform and Development of the Chinese Food Structure in the 1990s.’ In line with that, the Chinese Food Industry Association drew up the ‘Proposal for China’s Nutrition Development in the ‘90s,’ the ‘Proposal for Children’s Food Development,’ the ‘Proposal for Plant Protein Development’ etc.

Hence, literally and figuratively, China hungers for products, as well as new, advanced food technologies. Active applications of these new techniques have tremendously changed the pace of the development of the food industry. In all these years, more than 700 scientific and technical achievements in the food industry have won awards from the Ministry, with 109 achievements reaching the world advanced level. Furthermore, 681 achievements were obtained in food standardization, with 253 achievements being granted patents. These include new techniques in bioengineering, cold-drying, quick freezing, and membrane separation.

With China striding toward the 21st century, there remains a great potential in the development of the food industry. As the sleeping giant awakens, China will find herself inching toward the same ranks as the developed countries. The international index for evaluating the level of development of the food industry is the ratio of the total agricultural production to the total production of the food industry. In 1997, China’s ratio stood at 100:38 while for developed countries, the ratio usually ranges from 100:100 to 100:300.

Moreover, to bolster an increasingly sophisticated food industry, the legislation concerning the industry would be honed into a more comprehensive package. Presently, the laws, rules and regulations concerning the food industry are upheld by a scattering of different agencies and organizations. Some of these regulations include the ‘Food Hygiene Law,’ the ‘Salt Monopoly Rule,’ the ‘Management of Green Food Rule,’ etc. In order to strengthen legislation, a ‘Food Law’ should be drafted as soon as possible.

Finally, China’s food exports would increase greatly in the next century to penetrate into the international markets. Be it her food-making industry, food-manufacturing industry, or food-cooking industry, China will spread her tentacles worldwide in search of the potential export markets.
A n increasing number of venture companies are being set up by enterprising scientists, university students and professors in Japan. These companies tap the new technologies developed at universities and public research institutes and nurture them until they are strong enough to attract a large corporate backer. With the prolonged recession, the Japanese people no longer believe in the so-called lifetime-employment system, and are finding fewer opportunities in larger companies. Relocating from matured industries to emerging businesses, Japanese workers have created a more mobile labor force. These high-tech start-ups are gaining favor as a way to revitalize the Japanese economy. It has also become one of the government’s top labor policies.

More Japanese Scientists Setting Up Small Ventures

Professor Kenichi Matsubara of the Nara Institute of Science and Technology, is president of DNA Chip Research Inc., a biotech venture company. As a leading authority on genetic analysis, he has successfully established the first venture company in Japan. DNA chips are widely used in biotechnology and life science research for the screening of active genes in a specimen. At present, these chips are developed only by US companies and are expensive to buy. According to Matsubara, DNA Chip Research plans to sell chips at cost in Japan while developing original chips or equivalent technologies. Other success stories involve professors from Osaka University and Kyoto University who have set up companies to design system chips. In 1998, employees at the Institute of Industrial Science at the University of Tokyo have also set up I.I.S. Materials Co. to produce silicon for solar cells.

In order to encourage more university professors to transfer their intellectual property to industry, the Japanese government is providing extra funding for new businesses. Foundations offering direct investment for new companies have been set up. Kumamoto Immunochemical Laboratory Co., a drug-testing venture company, received 47 percent of its seed capital from a foundation in Kumamoto Prefecture. Its research projects are jointly supported by the Ministry of International Trade and Industry and a government financial institution. The company’s first product was an antibody that detects a protein existing in humans in very small amounts. The protein has been found to be a key factor of aging. According to businessman Tsuyoshi Ide, the product had sales totaling ¥20 million (US$165,000) for the first year, which was 20 times the average sales of a test drug. Ide has developed mutual alliances with some universities, whereby the company will obtain free proteins from the universities for the development of test drugs, while the university can use the product and continue their research on the protein. At the same time, the universities also receive donations (equaling 5 to 10 percent of sales from the drug) from Ide’s company.

The foundations also invest indirectly by channeling funds through venture-capital companies. The Japanese government has financial support in the form of research subsidies. These subsidies support future entrepreneurs by helping them develop core technologies. The national government has appropriated ¥11 billion (US$90.9 million) for 1999 to subsidize small companies that are developing new technology.

On the private financial front, venture-capital companies in collaboration with academic institutes have also started investing in early-stage venture businesses. In 1997, Jafco Co. and other venture-capital companies launched a fund that provides financial and administrative support for scientists or their partners in the Tsukuba University campus area. The Tsukuba fund aims to help scientists turn their research into commercial businesses. Participants in the fund invested a total of ¥1.1 billion (US$9.1 million). So far, the fund has invested a total of ¥100 million (US$827,000) in four companies.

"DNA Chip Research Inc., I.I.S. Materials Co. and Kumamoto Immunochemical Laboratory Co. are some of the highly successful businesses established by Japanese scientists."
Thai Exporters Work toward Countering Misinformation and Guaranteeing Food Product Quality

The Thai Industry Ministry and Livestock Department are working closely with Thai food exporters to act against claims by certain countries that food exports from Thailand are potential health hazards. An information center will be set up to stop the wave misinformation on health-related issues which could be used by some countries as a form of trade protectionism.

The chairman of Srithai Food Group, Mr. Sanguan Janarankul, confirmed that food product exporters are keeping a close tab on countries importing Thai food which may use health-related issues to restrict Thai food from entering their countries. The flow of rumors spread by competitors aiming to cause damage to the exporters will also be monitored.

The recent ban on food product imports from Europe, especially Belgium, has made Thai state agencies and the private sector very concerned. Bans such as this could inflict damage amounting to almost US$10 billion. Mr. Sanguan noted that Belgian exporters were aware of the problem of dioxin in their dairy products one month in advance but were too slow to respond to the problem. As a result, they lost their markets in Asia to competitors from Australia and New Zealand and were not in a position to recoup the huge losses. Another example would be the recent Nipah viral scare among pig farms in Malaysia which forced the Malaysian government to kill the infected pigs nationwide.

According to Mr. Sanguan, most Thai food production processes meet with international standards with only a few problems of poor hygiene. Furthermore, exporters have been very careful with regard to the use of chemicals or artificial products in raising animals for export. Along the same line, the Food Research and Product Development Institute has prompted the government to act against the use of chemicals in food products for export as well as establish a routine checking system for all export-oriented food production processes.

As a further measure, the export promotion committee (chaired by deputy prime minister and commerce minister Supachai Panitchpakdi) resolved to make the Thai Industrial Standards Institute the central agency for certification of Thai export products. At present, five agencies, namely, Ministries of Public Health; Industry; Agriculture and Cooperatives; Science, Technology and Environment; and Interior, are responsible for the certification of the products. However, these agencies have differing procedures and expertise in the various product standard certification fields.

The above proactive measures were taken because Thailand exports food and agricultural products with a combined value of almost 400 billion baht annually, and this figure is only second to electronics products and textiles.

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