

The Status and Measures for Industrialization of Agricultural Technology in Taiwan

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Traditionally, agricultural production is highly dependent on the natural environment conditions and weather conditions. The progress of agriculture has been mainly contributed by innovative variety-bred, land reform, chemical fertilizers, agricultural machineries, and cultivating management. However, the new technology indeed has introduced new opportunities for agricultural development to enhance competitiveness. Particularly, agricultural technology is now viewed as an industry, to proceed its superior value-added activities by research and development, which is differentiated from the value-added activities in traditional agricultural production.

In 2014, the government has done the major four perspectives to promote industrialization of agri-technologies. The current status are as follows:

1. Commercialization and industrialization of R&D outcomes

Council of Agriculture (COA) pushed the establishment of Agricultural Technology Research Institute on January 1st, 2014. Aiming at speeding up the development of innovative agricultural businesses and their globalization, the Institute provides agricultural technology with additional services for commercialization and industrialization to farmers, farmers' associations, and agribusinesses. Until 2014, the Institute already got four patents awarded in Taiwan and by overseas authorities, three licensing items and technology transfers, and promoted a total of NTD 680 million industry investments.

In addition, there were a lot of animal vaccines and many potential products for global markets developed during 2014 based on implementation of technology outcomes. They are all under the process of negotiations with domestic and international partners for licensing and technology transfer.

Moreover, some integrative R&Ds in ornamental fish and peripheral products have accomplished new modular breeding design for ornamental fish. In addition, anti-bacteria and anti-algae glass materials for aquarium boxes have been developed. The farming technology of clown fish, shrimps, and aquatic plants in addition to ornamental fish is now ready for the market.

The practice of technology development can be captured by the following achievements. First, two R&D mass product developments of bio-pesticides can be further pushed into the commercialization stage. There are also seven bio-pesticides developed with field trials done already. Second, there are seven companies counseled to

get 15 bio-pesticide registration certificates via technology transfer for product development. Third, a number of 33 intellectual property rights have been awarded in 2014, including 14 patents for vegetable and fruit mini-dryers, 19 plant variety rights, 142 technology transfers, amounting to more than NT\$100 revenue generated from R&D commercialization.

2. Promote industry-academia collaboration for agri-technology

During 2014, the Institute assisted 58 alliance project formations between academic institutions and industry companies. The overall value of industry-academia collaborations has accumulated a total value of NT\$1.23 billion during 2001 and 2014. In addition, there were 32 technology-specific industry-academia collaborative projects in 2014. These projects generated NT\$140 million in R&D investments, and an additional NT\$470 million in derivative investments. The overall industry value-added was around NT\$320 billion, which was equal to NT\$3.2 value-add per dollar of the government subsidy, with an average of NT\$6.1 in investments.

3. Counsel agribusiness innovation and financing

The Institute promoted 14 projects of operating an agribusiness enterprise system in order to assist agribusinesses to get financing funding for development. Twenty-four potential agribusinesses are under pre-IPO counseling process. Among them, GeneReach Biotechnology Corporation successfully ventured into IPO at over-the-counter capital market on August 2014. In addition, the Institute assists micro-venture of innovative agribusinesses to raise funds from Go Incubation Board for Startup and Acceleration Firms (GISA). For example, Li-Yuan Farm Technology Corporation and Lemnaceae Fermentation, Inc. have already listed at GISA, in addition to four additional micro-agribusiness startup firms, which also received assistances and review comments from the Institute.

4. Complete the construction of Taiwan Orchid Plantation

The construction of Taiwan Orchid Plantation operation center and the demonstration greenhouse was completed in 2012. There were 108 companies approved to enter the Plantation industrial park by the end of 2014. Among all of them, 63 companies already got started into real operations, with a total investment of NT\$9.53 billion, which generated an accumulated amount of NT\$8.69 billion revenue. In March 2014, Taiwan International Orchid Show at Taiwan Orchid Plantation received a total valued trade orders of NT\$9.53 billion.

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