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Implementation of the New Farmers' Cultivation Program in Taiwan

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ABSTRACT

According to the statistical data of Directorate General of Budget, Accounting and Statistics (DGBAS) of Executive Yuan, R.O.C. (Taiwan) in 2017, the number of farmers in Taiwan have gradually decreased from 1.6 million in 1978 to 557,000 in 2017. According to the 2015 census of agriculture, 73% of the children of farmers and herdsmen had no intention to continue to work in agriculture. The Council of Agriculture (COA) will aim to persuade and entice 30,000 new farmers in the next 10 years through the "New Farmers' Cultivation Program". In the said plan, the COA would cultivate new farmers through school education and extended education. The COA encourages students to experience agricultural work. It provides training courses through the farmers' academy and practical training in farms. According to the support of youth associations in the county and city, the links and influences will guide the clustering, integration and value-added development of the industry, and thus change the future industrial management pattern. In addition, through the young farmers' project counseling, 100 young farmers will be selected, and will carry out a two-year one-on-one companionship counseling to expand the scale of young farmers' operations and develop it towards enterprise management.

Keywords: Young farmers, Council of Agriculture (COA)

INTRODUCTION

Agriculture in Taiwan is facing a period of internal and external changes. These changing conditions include:

The expansion of free trade exacerbates the already fierce competition. Increasing economies of scale for agricultural producers is a priority

According to the 2013 Report on Core Farm Households Survey (source: Directorate-General of Budget, Accounting and Statistics, Executive Yuan), 106,000 core farm households, or 71% of the total core farm households, are reported to often engage in agricultural work as of the end of June, 2013. However, the total cumulative area that has been farmed over the year is only 220,000 hectares, or 31% of the total available farmlands. The average farmlands worked by each household over time is only 2.2 hectares, meaning that the land-use intensity and economies of scale of the production are in dire need of improvement. As free trade looms on the horizon, the current agriculture industry in Taiwan will take a major blow with severe impact once the border opens. It is of paramount importance for the industry to recruit the key talents and resources that enable industry transformation, creating the momentum for the industry to morph into a more sustainable enterprise.

Agricultural production and biodiversity are under attack from extreme climate and climate change

Taiwan is inevitably subject to the impacts and challenges arising from global climate change; agriculture, among all industries, is on the front line. Statistics have shown that climate in Taiwan is becoming warmer, the rainfall patterns changing, sea levels rising, occurrence of extreme weather more frequent and intense. The changes have affected agricultural production and biodiversity of the island country in many ways.

Taiwan has a low food self-sufficient rate that requires improvement

The structure of the agricultural sector and farmland area in Taiwan have changed since the country underwent social transformation from a primarily agricultural society to a society predominated by industrial and commercial sectors, along with free trade expansion and Taiwan's accession to the WTO. Taiwan's food self-sufficiency rate on a calorie supply basis has dropped from 123% in 1961 to 34.1% in 2014, lower than the counterparts in neighboring South Korea and Japan. Therefore, the Council of Agriculture (COA) sets the goal of increasing Taiwan's food self-sufficiency rate to 40% by 2020, thereby improving the country's food security and multifunctional agriculture.

Aging agricultural workforce creates gap in agribusiness

The agricultural workforce in Taiwan has shrunk over time from 1.6 million people in 1978 to 557,000 people in 2017, a 65% decline according to the survey data released by Directorate-General of Budget, Accounting and Statistics in 2017. Furthermore, according to the 2015 Census of Agriculture, Forestry, Fishery and Husbandry, 73% of the members of these farming households express no interest in continuing the occupation as the peril of an agricultural workforce gap looms. The age structure in these farming households also gives rise to further concerns. According to the 2015 Census of Agriculture, Forestry, Fishery and Husbandry, there are 720,000 farming households that actively engage in agricultural work but the average age of these household-based agribusiness managers is 63.5 while 46% of the same population is over 65 years old. Another issue associated with an aging agricultural workforce is the difficulty for the workers to undergo transition to knowledge-based agribusiness workers, a disadvantage to future agricultural innovations and sustainable development.

The agricultural talent development process shows gap between education and employment

The general education system reform programs, launched since 1996, have facilitated restructuring of vocational schools, technical colleges and institutes of technology. Most students enrolled in agriculture-focused vocational colleges turned to seek admission into comprehensive universities and as a result, the agriculture-specialized vocational education system no longer produced qualified agricultural talents. Many agriculture-specialized vocational school graduates are also inclined to choose a different career path as other industries compete for talent recruitment. The sector experiences a shortage of agricultural talents as well as a widening gap between education and employment. Governmental intervention is needed to initiate an inter-agency effort to establish an education system and an industry structure conducive to development of agricultural human resources, furthering agricultural talent development with appropriate policies and measures.

The front-line workforce is in acute shortage and in dire need of replenishment

The agricultural workforce is composed of, predominately, unpaid family members (85.9%), seasonal workers (10.5%) and, rarely, employees (3.6%). The highest education achieved by 60% of the workforce is elementary school and self-study. The workforce structure mirrors the plight of the industry dominated by smallholder household farmers. Furthermore, agricultural workers need to accept a non-conventional schedule, poor work conditions and often unsatisfactory work sites; the younger generation is usually less than willing to accommodate the dismal conditions. Moreover, different plant species vary greatly in their respective growth habits and planting management schedules, creating entry barriers for agricultural workers in the form of technical and experience requirements. However, the agricultural workforce is predominately consisted of unpaid family members, along with seasonal workers to ameliorate the labor shortage during busy times. Given the fast-aging population in farming villages, there is a shortage of successors who are willing to continue the work. According to agribusiness owners, this in combination with the fact that some agricultural tasks cannot be mechanized lead to general labor shortage and high wages, hampering agribusiness operations in a severe way. The front-line workforce is in acute shortage and in dire need of replenishment.

In sum, free trade inevitably affects agriculture and gives rise to challenges. Each country responds to the effect primarily by strengthening its agricultural competitiveness. Agriculture human resources development plays an indispensable role that determines the success of the general agricultural competitiveness enhancement effort. Human resource development is crucial to different dimensions of the industry, including innovative agricultural technology application and farming efficiency improvement; it also determines the outcome of general innovation and transformation of agriculture as well as the workforce structure adjustment. Given these reasons, countries around the world commit resources to guide and nurture young farmers in the hope that the expanded and improved agricultural workforce will be the key player in leading the agricultural competitiveness enhancement campaign. Taiwan needs to identify the intrinsic momentum for developing qualified young agricultural talents to carry forward the industry among the dynamics of global agriculture. The ultimate objective of achieving sustainable development in agriculture adds urgency to the issue. Finally, “an aging workforce characterized by a shortage of agribusiness owners”, “absence of the economies of scale” and “the gap between education and employment” are current challenges facing agriculture in Taiwan. These

issues need to be addressed sooner than later. To this aim, COA plans to train and prepare new-generation of farmers for development of smart agriculture, e-commerce, agricultural products marketing and agri-technologies industry on a global scale as important policy goals. Young farmers are encouraged to introduce new concepts into agriculture and apply new strategies including interdisciplinary collaboration, market-oriented value model, smart production management and creative value-added services. It is hoped that young farmers will revitalize the agriculture and facilitate sustainable development of the industry.

COA-LED PROGRAMS

The COA-led programs to train and support young farmers, in line with different stages of career path for youngsters in agriculture as well as based on the industry and talent requirements for the Ten Smart Agriculture Pilot Industries and the Key Agri-bioscience Industries, contain four strategies and different implementation measures in order to provide comprehensive training and support to new farmers, thereby developing and revitalizing farm villages and industries. The highlights of the programs are summarized as below:

Sowing and sprouting

The future value chain of agriculture links the primary sector with the secondary and tertiary sectors of the economy. School curricula will provide the foundation of human resource development in line with the long-and medium-term labor requirement in agriculture, followed by COA training and support programs available to new farmers. The goal is to increase the percentage of students in agriculture-specialized schools who choose to work in the agricultural sector after graduation and to attract non-agriculture students and young people to launch a career in agriculture. The following measures will be applied:

Encourage students to engage in pre-career exploration and provide resources to prepare students for careers in agriculture

- COA creates farm internships and farming education programs to help agriculture and non-agriculture students to explore a career in agriculture. The programs aim to help students gain a better understanding of job positions and skill requirements in the sector and plan a career roadmap accordingly.
- B. Programs will be in place to encourage university/college or agriculture-specialized vocational school graduates to participate in farm internships as the graduates learn while helping out the farm work. Scholarships will be provided as an incentive for young people to launch a career in agriculture and become a qualified agricultural talent.
- C. The COA began trial implementation of the “plan for incentives for high school students to go into agriculture” was launched in 2017 to encourage students to join the agricultural workforce. The program also encourages senior high school students to start employment at a farm upon graduation. The incentive program will be expanded to cover the university/college system.

Launch of industry-academia collaboration to develop human resources

- The COA organized publicly funded agricultural classes, offering precision training people who could be future farmers needed in agriculture for four years after graduation.

- B. Programs are created in line with the New Southbound Policy to encourage students from ASEAN and South Asian countries to study agriculture-related fields in Taiwan. COA provides guidance to agriculture-specialized schools to set up special international programs in agriculture and to establish an industry-academia co-op program to connect agribusinesses with agricultural talents.

Offer fundamental training programs to help new aspirants to launch a career in agriculture

The existing introductory programs offered at Farmers' Academy are expanded to help the non-agriculture talents and people who return home for a new life to acquire the fundamental skills required for a career in the agricultural value chain.

Cultivation and growth

Efforts are made to increase the market value of the agriculture-related expertise based on the industry trends and dynamics. Measures are taken to facilitate the circulation of information about availability and requirements of talents and jobs. COA will also improve the on-the-job training system, create a job bank platform and speed up the development of talents with practical knowledge of the industry. The following measures will be applied:

Strengthen the learning system to improve on-the-job training

- Agencies under the COA are to establish, step-by-step, qualification criteria and skill assessment processes for key industries, by which curriculum development, training program development, corporate recruitment, skill evaluation and review may be performed accordingly. The criteria and procedures need to incorporate and synchronize with the changing industry structure and workplace settings as they provide the reference standards for future development of an agricultural professional certification system.
- B. Advanced training programs offered at the Farmers' Academy are modified to help middle-to high-level talents in agriculture to hone their technical and management skills. The College will offer skill assessment courses as the COA introduces the skill assessment process for key industries and awards professional certification accordingly.

Strengthen the labor market and increase the value of expertise

COA will introduce training programs based on the industry's labor requirements and consult with agriculture-related chambers of commerce and trade unions/associations to provide employment opportunities. The training programs will be held in collaboration with the industry organizations in order to speed up the students' transition from training to employment and bolster the industry's interest to hire the program graduates.

Establish innovation incubators to accelerate the young farmer incubation process

New innovation incubators in line with the requirements of the key industries will be established

to provide comprehensive programs and facilities as well as incubation advising services. Resident young farmers may make use of the resources to perform preliminary commissioning testing on the new technological innovations, planting technologies and business models that may contribute to industry upgrading. The incubator aims to serve as a long-term space for agriculture-related practicum.

Growth and improvement

In response to free trade expansion and the changing nature of the industry value chain, young farmers will need assistance in business development through mutual cooperation based on business clusters. In the process, the farmers need to gradually develop a business model for cooperation or innovation in order to begin commercialization to become an emerging agribusiness enterprise. The business model needs to be competitive based on a local and highly specialized small-scale business cluster or a large-scale name brand corporation, as the case may be. The following measures will be applied:

Introduce case-by-case consulting services to create a young farmer’s benchmark model

COA offers case-by-case consulting services that integrate the Council’s agricultural technology R&D resources, information on lands of the farmland banks, agricultural equipment and facility subsidies, case-by-case policy loans for agricultural purposes, professional training and management consulting services. The one-on-one consulting process provides access to a wealth of human resources consisted of retired experts from various COA research and extension stations as well as scholars from the academia, whom are available through the network of Teacher Chang Agriculture Advice Stations located in different regions across the country. New species, technologies, branding/marketing/packaging design, product development and processing, information and communication technology (ICT) and innovative mindsets in management are introduced to help young farmers to kick off and sustain the business. As a young agricultural enterprise gets off the ground and becomes established, expansion in the economies of scale or into value-adding innovations may be considered; the enterprise may also boast itself to be a success story for young farmers in the area (Table 1). The 100 Young Farmer Consulting Program, since its inception in 2013, has opened for application four times and admitted 467 young farmers.

Table 1. Input and out of “The 100 Young Farmer Consulting Program”

Class	Number of young farmers	Number of consulting	Loan amount (US\$)	Area expansion (hector)	Number of products inspection	Average increase in output value (%)
1	100	3,241	4,483,101	510	243	61
2	105	3,095	7,371,510	81	104	102
3	113	2,296	8,208,450	741	258	74

Establish a platform for communication and facilitate mutual cooperation based on local clusters

A platform for communication and service among local young farmers is established to facilitate exchange of information, mutual cooperation and transfer of agricultural knowledge from old to young. The platform revolves around service integration, information sharing and mutual resource management as it deepens the cooperative relationship between the central government and local organizations. Through the platform, local young farmers build up unity and work towards sustainable development by consolidating resources and engaging in joint ventures oriented towards commercialization and corporatization. 3,518 users joined the platform in 2017. Given the participation by local youth, the platform serves the function of facilitating organization of local farmers, mutual cooperation based on a business cluster and transfer of production and marketing experience.

Fruitful harvest

COA envisions to have youth put down their roots in farm villages, making connections with the local people, land and waters. Local industries flourish from the new members as the farm village offers multiple dimensions of life to the residents, including production, living and ecosystem, accommodating young people who settle in and pass down the heritage and business in sustainable development. The following measures will be applied:

Encourage innovative value-adding services and strengthen the development of local industries in the farm villages

The innovative value-added business consulting services are offered to the local industries with the aim to create innovation-enhanced value and facilitate transition to the senary industry. Young farmers who propose value-added innovation models are rewarded and provided with consulting services to make the business plan into a reality. The value-added services include e-commerce, agricultural information and communication technology (ICT), agricultural biotechnology, product processing, automated equipment/ machinery improvement, industry development and other activities that contribute to the resolution of a current business difficulty or plight in the agricultural industry, or constitute an innovation or value-adding service with the potential to revitalize the village economy.

Combine the resources from the agriculture zone and amplify the cluster effect

Young farmers with great potential are recommended to start a venture in the COA-designated agriculture zone with established procedures and resources. The concentration of active farmland leads to better economies of scale. On the other hand, such concentration allows vertical integration of production, processing, packaging and marketing to maximize operational efficiency and business profit.

Overseas learning opportunities to broaden the horizons and seek potential cooperation

The annual Young Farmers Overseas Learning Tour is an opportunity for young farmers to visit foreign agribusinesses, farms and fairs to obtain new knowledge and bring back new agricultural

machinery or technologies to Taiwan. By joining these tours, young farmers apply the new knowledge to improve product quality in line with international standards and explore international business leads to enter the foreign markets and to strengthen the competitiveness of Taiwanese agricultural products.

CONCLUSION

COA's New Farmers' Cultivation Program spans across four stages of agricultural venture development: 1. Sowing and sprouting, 2. Cultivation and growth, 3. Growth and improvement and 4. Fruitful harvest. The programs will be made available through two paths, the academic institute (formal education) and the workplace (continuing education), in order to train and support young aspirants to launch a career in agriculture. The programs aim to train 3,000 new farmers per year. The New Farmers' Cultivation Program were launched close to two years ago. The young farmer associations all over Taiwan are growing and becoming more active than ever as the number of young farmers who take advantage of the COA's consulting services is also increasing over time. COA also provides assistance programs to young farmers who require provisions including land, financing and technologies. Promising young farmers will continue to have access to consulting services as COA guides these farmers to engage in mutual cooperation based on a business cluster and to work towards corporate-style business model. Moreover, COA will also strengthen its training programs for qualified technical experts in all fields, issuing regulations or certification programs to recognize expertise in the agriculture-related fields and make certain practices executable exclusively by certified experts. COA will also engage in agricultural management talent development and encourage international agricultural experts to come to Taiwan through overseas training and international exchange programs in order to facilitate diverse and innovative development.

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