



Cultivation of High-Quality Farmers: International Experience and Lessons Learned

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SUMMARY: *The high-quality farmer crowd has very important meaning to China's agriculture and countryside modernization progress. To sum up the experiences of foreign nations in the fostering of high-quality farmers, for example the making of fostering plans, the carrying out of digital agricultural training, and the putting of priority on the development of farmers themselves, therefore can offer precious reference and inspiration for solving the bottleneck problems in the fostering of high-quality farmers in our country. According to the real situation of China, this article talks about methods to push the nurturing of high-quality farmers in China from three angles: increasing allowance for ability development, carrying out diverse education and training, and arousing the inside motivation of farmers.*

KEYWORDS: *international experience; young farmer cultivation; vocational training*

1 Introduction

At present, China lies in a critical phase within the course of agricultural and rural modernization drive, and farmers are a core crowd for the realization of this objective. In year 2019, the Ministry of Agriculture and Rural Affairs, together with many departments, has issued the *National Strategy Plan for Pushing Agricultural Quality (2018–2022)*, which put forward: “Build a high-quality agricultural talented person group and enlarge the team of new type professional farmers.”^[1] In the recent years, our China has put very great stress on the fostering of high-quality agricultural producers. The "14th Five-Year Plan for Pushing Forward the Modernization of Agriculture and Countryside Regions" puts emphasis on that we need promote farmers' overall literacy by way of education and training.^[2] Afterwards, the Ministry of Agriculture and Rural Affairs has distributed the "Work Arrangements of 2024 High-Quality Farmer Training Project," the purpose of which is "strengthening the ability of farmer education and training system, and carrying out innovation on education and training modes."^[3] It is evident that how to better cultivate high-quality farmers is one of the government's key strategies at present.

From the theory angle, the study of high-quality farmers mainly puts focus on two respects: first, it stresses the necessity of occupation training for promoting farmers' quality. Hantos K (2010)^[4] argues that vocational training can enhance farmers' literacy, thereby increasing the efficiency of agricultural activities. Luo Mingzhong et al. (2022)^[5], through empirical research, emphasize the need for diversified training tailored to the needs of

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high-quality farmers. Second, research focuses on pathways for cultivating high-quality farmers. Nasreen Banu and K Yashoda (2018)[6] emphasize the significance of offering agricultural education and training to countryside young people in India, and expanding training content on core abilities which are needed for agricultural work. Wang Weijia et al. (2024)[7] highlight through empirical research that the digital skills of high-quality farmers play a crucial role in their participation in agricultural activities; therefore, skill training should be conducted to enhance their digital literacy. Third, research on the evaluation of the quality of high-quality farmer development programs. Jansuwan P. et al. (2021)[8] found through an evaluation of the quality of a young farmer training program that the initiative plays a certain role in alleviating the aging of Thailand's agricultural workforce. Shi Weiping and Lü Limin (2024)[9] assessed the effectiveness of high-quality farmer training in Jiangsu by developing evaluation criteria, confirming that such training yields positive results in advancing agricultural modernization. These findings lay a solid foundation for subsequent research. However, efforts to leverage international experience to enhance the quality of China's farmers remain insufficient, and there is still a need to further explore international practices in cultivating high-quality farmers. Therefore, this study will summarize international experiences in cultivating high-quality farmers while identifying bottlenecks in China's farmer training programs. Building on this foundation and drawing on international experience, the study proposes policy recommendations to boost the quality of China's farmers from three perspectives: the government, training institutions (implementation of farmer training), and the farmers themselves.

It is worth noting that regarding the concept of high-quality farmers, this study draws upon the work of Li Li and Zhang Jun (2023)[10], Mei Xingxing and Yang Zhiqing (2024)[11], and other scholars, give the definition of high-quality farmers as follows: a collective which has green agriculture consciousness, full-range overall qualities, and the capability of applying digital agriculture technologies in agriculture production activities, hence they realize their own development and drive the modernization of China's agriculture and rural regions.

2 International Experience in Cultivating High-Quality Farmers

2.1 Formulating Farmer Training Programs

In the past several years, very many countries have already encountered the problem that the agricultural work force is becoming older and older. The effective training-related policies are the essential things for attracting the young farmers to take part in the agriculture-related activities. Nations in all the world have already specially drawn up training schemes for the young farmers. Turkey has established a special organ (YFPS) which is responsible for the development of young farmer training projects. In 2016, this agency launched two initiatives—the “Youth Farmer Project Support” and the “National Agricultural Engineering” programs—to attract Turkish youth to agriculture. These programs emphasize strong government financial support for young farmer training and encourage young farmers to pursue agricultural entrepreneurship.[12] Indonesia is a typical agricultural nation. According to data from the Indonesian Central Statistics Agency (BPS), the number of people employed in the agricultural sector remains high, accounting for 24.96% of the total labor force. In 2020, out of Indonesia's 140.22 million-strong labor force, 35 million people were engaged in agricultural activities. The period from 2010 to 2040 marks Indonesia's demographic dividend,

characterized by a surge in its young population. The Indonesian government is capitalizing on this demographic dividend by cultivating young farmers who are familiar with agricultural production and interested in the sector. Encouraging these young farmers to enter agriculture is a crucial strategy to address the aging agricultural workforce and ensure the sector's long-term sustainability. The Indonesian Ministry of Agriculture defines "young farmers" as those aged 19–39 who have a strong interest in agriculture, can adapt to digital technology, and possess the ability to build business networks. To better cultivate young farmers, the Ministry has formulated a 2020–2024 Strategic Plan (Renstra) aimed at improving the quality of young farmer training in Indonesia.

The development of young farmers requires not only the formulation of effective policies but also the assurance of agricultural funding, which is one of the key means of ensuring the quality of their training. To attract young people to agriculture, European countries have established agricultural subsidies as a measure to encourage young farmers' participation in agricultural activities. Since 2007, the Czech Republic's development plan has made subsidy incentive policies for young farmers a core component of the plan, aiming to attract young farmers to actively participate in agricultural activities. Pechrová M Š et al. (2020) from the Czech Republic [14] conducted an empirical study to evaluate whether the establishment of agricultural interest rate subsidies and other agricultural policies could effectively attract young farmers to actively participate in agricultural activities. The results confirmed that the implementation of agricultural subsidies can, to a certain extent, stimulate young farmers' interest in participating in agricultural activities and provide financial support for their development. The European Farmers' Association recommends strengthening vocational training for young farmers and employing two approaches—partial agricultural tax relief and interest subsidies—to attract young people in rural areas to participate in agricultural activities. Portugal, similarly supported by the European Union's Common Agricultural Policy (CAP), provides financial assistance to young farmers under the age of 40 who have applied for agricultural business registration within the past five years and participated in training. Similarly, under Portugal's Rural Development Program, young farmers aged 18 to 40 who submit a five-year business investment plan are eligible for EU seed funding. Additionally, the program provides equity capital support for young farmers establishing agricultural enterprises, effectively addressing issues of insufficient capital and financing for agricultural businesses.

2.2 Conducting Digital Agriculture Training

As the trend toward agricultural digitization continues to deepen, farmers' digital literacy has become a topic of global concern. Countries are enhancing farmers' digital literacy through education and training programs, with many incorporating digital agriculture technology training into their agricultural education curricula—particularly training in digital agriculture skills for young farmers—to attract them to the sector and improve agricultural production efficiency.

European countries have formulated development plans for agricultural digitization; however, compared to European nations that began this process earlier, Spain's progress in digitizing the agricultural sector has been relatively slow. The primary challenges currently facing Spain's development of digital agriculture include: weak information technology infrastructure in rural areas, inadequate agricultural data-sharing services, lingering cybersecurity risks, and low digital literacy among farmers—particularly among young female farmers in rural areas, where this issue is especially pronounced. To address these issues, the Spanish government has launched a rural development plan that includes advancing digital agricultural technologies, supporting digital education and training in the

agricultural sector, and establishing an open agricultural technology innovation system in the future. This initiative aims to cultivate young farmers' digital agricultural skills, enable agricultural entrepreneurship through digital technologies, and increase farmers' incomes. The Spanish government has also established a multi-stakeholder cooperation mechanism to help young farmers improve their digital literacy through support from both government and civil society.

Asian countries also place great emphasis on education and training in digital agriculture. Smart agriculture is one of the key approaches to agricultural development in Thailand, and how to use smart agriculture to improve Thai farmers' cultivation techniques has been a major agricultural concern for both the Thai government and the private sector in recent years. To develop smart agriculture, farmers themselves must possess a certain level of digital literacy. Suebsombut P et al. (2020) [18] suggest that Thailand should categorize and provide targeted training for young farmers' digital agriculture skills in the future, offering appropriate learning content tailored to their varying levels of digital proficiency. The Indonesian government has strengthened collaboration with the agricultural sector by improving the quality of agricultural equipment and introducing ICT and short-video platforms like YouTube as new tools for young farmers, enabling them to access the latest agricultural technology information. The government has also established agricultural information centers to provide consulting services and resolve issues farmers encounter when using digital tools.

Canada, located in North America, is one of the world's leading agricultural powers. As the pace of digital transformation in the agricultural sector accelerates, Canadian provinces are prioritizing the development of digital agriculture. The Canadian government has invested substantial funds to support provinces in adopting advanced digital technologies to enhance agricultural productivity. Additionally, the government has launched dedicated digital agriculture technology initiatives, urging provinces to prioritize the application of digital agricultural technologies. British Columbia is currently reforming its food system, aiming to introduce digital agricultural technologies to increase food production and ensure national food security. In the future, the province will continue to provide education and training on digital agricultural technologies for agricultural educators and technical trainers. The Canadian government guides farmers on how to use digital agricultural tools to improve traditional farming methods and increase efficiency. The government is strengthening cooperation with agricultural schools to provide paid internship positions for agricultural students in student cooperatives, allowing them to learn digital agricultural technologies in real-world settings. Digital agriculture trainers utilize online training, face-to-face sessions, classroom instruction, and on-farm practical training to teach students these technologies. This ensures that students in agricultural programs are better prepared to adapt to the future of digital agriculture, and cultivating young farmers has become a key strategy for Canada to address the aging agricultural workforce.

2.3 Prioritizing Farmers' Self-Development

Only by fostering farmers' personal development, increasing young farmers' interest in agricultural activities, and encouraging them to commit to agriculture can rural economic development be driven forward. Countries around the world recognize the role of young farmers in promoting rural development and encourage them to actively participate in farmers' organizations, where they can play a role in achieving their own personal growth. African nations place great emphasis on the role of farmers' organizations, whose primary functions include: assisting young farmers in accessing capital, information, and technology; promoting agricultural technology; and collaborating with government agencies to conduct agricultural education and training. Ghana has established farmers' organizations where farmers can

promptly seek technical assistance. These organizations work with the government to help young farmers better access financial and technical support. Governments and farmers' organizations help farmers reduce certain costs and taxes, thereby alleviating some of their financial burdens, increasing agricultural yields, and boosting the income of young farmers. At the same time, they strengthen cooperation among governments, farmers' organizations, agricultural enterprises, and the farmers themselves to facilitate farmers' personal development and stimulate their enthusiasm for participating in agricultural activities. Young farmers in rural Nigeria face the challenge of limited livelihood options; due to low agricultural incomes, the number of young people engaged in agriculture is gradually declining. Consequently, Nigeria places great emphasis on the cultivation of young farmers. M.U. Dimelu et al. (2020)[22] recommend that Nigeria encourage young farmers to join agricultural social organizations in the future. With the assistance of these organizations, the loan burden on young farmers can be reduced, and their livelihoods improved. At the same time, cooperation between the government and agricultural social organizations should be strengthened to attract more young farmers to participate in agricultural production activities, thereby revitalizing Nigeria's agriculture.

3 The Current Status of Farmer Training in China

3.1 Investment in training funds has been steadily increasing, but funding sources remain relatively limited

China is currently in a critical phase of agricultural and rural modernization and urgently needs to build a high-quality workforce in agriculture and rural areas. As one of the core forces, the state must provide sufficient financial resources for the training of high-quality farmers. In recent years, as evidenced by the National Report on the Development of High-Quality Farmers released at the National Forum on the Development of Farmer Education and Training, China has invested substantial funds to provide financial support for the training of high-quality farmers. According to data from the *2020 National Report on the Development of High-Quality Farmers*, in 2020, the Ministry of Agriculture and Rural Affairs, in collaboration with the Ministry of Finance, allocated 2.3 billion yuan to support the training of high-quality farmers across the country, achieving near-universal coverage of agricultural counties.⁽ The state guides localities to actively cultivate high-quality farmers and build a talent pool of high-quality farmers. To alleviate the financial strain faced by high-quality farmers, the state has actively collaborated with multiple departments to formulate relevant fiscal policies, ensuring that high-quality farmers have sufficient funds to engage in agricultural activities. In October 2023, the Ministry of Agriculture and Rural Affairs, in collaboration with the Ministry of Finance, the Ministry of Human Resources and Social Security, and other departments, introduced policies to optimize guaranteed loans for the training of high-quality farmers and their independent entrepreneurship. These policies increased the individual guarantee limit and raised the loan limit for establishing small and micro enterprises from 3 million to 4 million yuan, with a focus on providing financial support to groups such as high-quality farmers returning to their hometowns to start businesses. In April 2024, during a State Council press conference, the national first-quarter fiscal report mentioned an investment of 5.8 billion yuan to increase funding for the training of key agricultural and rural talent, such as high-quality farmers, and to build a high-quality talent pool for agricultural and rural modernization in China. This demonstrates that China is continuously increasing its investment in the training of high-quality farmers to ensure their

active participation in agricultural production activities, thereby securing a sustainable future for the country's agriculture.

Although China has invested substantial funds in the training of high-quality farmers, there is still room for improvement when compared to agricultural support policies in other countries. High-quality farmers still face the issue of insufficient financial subsidies, as the government's funding channels are relatively limited and lack dedicated funding programs specifically for their training. Additionally, high-quality farmers often rely on their personal social networks to secure funding, yet their capital for independent entrepreneurship remains insufficient. This hinders their entrepreneurial development, and the shortage of funds can dampen their enthusiasm for participating in agricultural activities. At the same time, high-quality farmers need to improve the efficiency of agricultural fund utilization to maximize their impact and ensure the smooth implementation of entrepreneurial projects.

3.2 While the number of training participants continues to grow, there are still shortcomings in the target audience and training content

China has long placed great emphasis on farmer education and training. Particularly since the start of the 14th Five-Year Plan, as the country has entered a critical phase of agricultural and rural modernization and the comprehensive revitalization of rural areas, there is a need to enhance farmers' overall literacy through education and training. Under the guidance and promotion of relevant national and local authorities, the number of high-quality farmers participating in training has steadily increased, stimulating their enthusiasm for participation. China has relied on agricultural vocational colleges to recruit and provide vocational training for high-quality farmers, resulting in a continuous rise in the number of farmers being trained. From 2021 to 2023, the number of high-quality farmers trained in China rose from 717,000 in 2021 [26] to over 800,000 in 2023 [27]. Farmers have expressed a desire to acquire knowledge and skills through education and training and are willing to participate in such programs, indicating that farmer education and training in China has achieved certain results. To better leverage the role of education and training, although the number of farmers participating in training continues to increase, further optimization is needed in terms of both the target audience and the content of the training.

Regarding the target audience, agricultural vocational training for female farmers—particularly those left behind in rural areas—remains insufficient. Female farmers primarily acquire agricultural cultivation techniques through instruction from family members, and existing agricultural training programs tend to focus heavily on theoretical knowledge. This prevents female farmers from accessing practical agricultural skills, resulting in poor training outcomes and dampening their enthusiasm for participating in agricultural training.

In terms of training content, agricultural education and training programs remain relatively narrow in scope. As the trend toward digitalization deepens, new development models such as digital agriculture and smart agriculture are continuously emerging, presenting significant opportunities for cultivating high-quality farmers. Due to the significant digital divide between urban and rural areas, farmers in rural regions remain "digitally disadvantaged." Consequently, there is an urgent need to improve the digital literacy of high-quality farmers, as they still lack in areas such as digital awareness, technical proficiency, and information security consciousness. However, training content specifically targeting the digital literacy of high-quality farmers is currently lacking. At the same time, current farmer education and training programs in China rarely address the enhancement of farmers' comprehensive competencies. For instance, areas such as mastering ecological agriculture techniques, fostering industry-driven development, and cultivating a love for rural culture require improvements in training content to comprehensively elevate the overall competencies

of China's high-quality farmers.

3.3 While the professional capabilities of high-quality farmers are continuously improving, their awareness of personal development remains insufficient

China is enhancing the professional capabilities of high-quality farmers through education and training. After completing vocational education and training, these farmers are required to obtain national vocational qualification certificates to elevate their professional standards. In recent years, the proportion of China's high-quality farmers holding national vocational qualification certificates has been steadily increasing, confirming the continuous improvement of their professional capabilities. This trend contributes to the development of a specialized agricultural and rural talent pool. For example, data from the *National Report on the Development of High-Quality Farmers* covering the three-year period from 2022 to 2024 shows that in 2021, 18.97% of China's high-quality farmers held national vocational qualification certificates. In 2022, the proportion of high-quality farmers in China who obtained national vocational qualification certificates increased by 3.46 percentage points compared to 2021.^[27] In 2023, the proportion of high-quality farmers in China who obtained national vocational qualification certificates increased by 2.39 percentage points compared to 2022.^[28] Although the agricultural professional capabilities of China's high-quality farmers are continuously improving, farmers themselves still lack a sufficient sense of self-development.

Although China places great importance on the cultivation of high-quality farmers and has issued a large number of policy documents, promoting rural development requires not only government support but also the self-development of farmers as the core actors. China's high-quality farmers still lack awareness regarding their own development, as evidenced by issues such as insufficient participation in farmers' professional cooperatives and a lack of in-depth understanding of rural culture. Only by stimulating farmers' endogenous development momentum can we achieve endogenous rural development and help China realize the grand goal of agricultural and rural modernization.

4 Insights from International Experience for the Cultivation of High-Quality Farmers in China

4.1 Increasing Subsidies for Talent Development

China's policies for cultivating high-quality farmers are continuously being optimized, but they still require further refinement to provide solid financial guarantees for this initiative. Regarding financial support for cultivating high-quality farmers, efforts should continue to increase investment, improve the efficiency of agricultural fund utilization, introduce specialized agricultural subsidy policies, establish dedicated funding support programs for cultivating high-quality farmers, and expand funding channels for this initiative. In addition to government funding, the government can collaborate with financial institutions, banks, and other relevant departments to establish a multi-channel funding system integrating fiscal funds, financial resources, and insurance. In particular, key support projects such as attracting young talent to rural areas and cultivating high-quality farmers require long-term incentive policies and safeguards to ensure adequate funding for the cultivation of high-quality farmers, thereby providing financial support for building a professional agricultural and rural talent pool. At the same time, subsidy policies for agricultural education and training programs

should be established. The role of vocational education and training must be emphasized. Subsidies should be provided for agricultural training programs and agricultural institutions conducting vocational training to stimulate their enthusiasm for such initiatives and encourage high-quality farmers to actively participate in agricultural vocational training.

4.2 Implementing Diversified Farmer Education and Training

China has long placed great emphasis on farmer education and training. As the country moves toward agricultural modernization, future efforts in this area must be optimized in terms of target audiences, training content, and the educational system.

Regarding training content, programs on digital agricultural technologies and entrepreneurship should be added. High-quality farmers can enhance their digital literacy by participating in digital agricultural technology training. At the same time, entrepreneurship training should be implemented to improve farmers' entrepreneurial capabilities and their ability to drive industrial development. With the rise of digital agricultural technologies, digital literacy has become indispensable in the cultivation of high-quality farmers. In training programs for high-quality farmers, attention must also be paid to the digital literacy and entrepreneurial skills of rural women farmers, enabling those who remain in rural areas to utilize digital technologies for entrepreneurship and improve their household livelihoods. Therefore, the government must provide effective guidance and promotion for digital agricultural technology training. Relevant departments should strengthen coordination to enhance high-quality farmers' understanding of policies related to digital agricultural education and training, fostering their awareness of digital agriculture and improving their cognitive abilities regarding these technologies. When conducting agricultural technology training, tiered and categorized digital agricultural technology training should be implemented to address varying digital skill levels. Concurrently, efforts should be made to encourage high-quality farmers to utilize digital skills for agricultural entrepreneurship, thereby enhancing their entrepreneurial capabilities. When adopting digital agricultural technologies, agricultural advisory service agencies should be established to help high-quality farmers master new technologies more quickly. Through digital platforms, e-commerce platforms, and new digital agricultural tools, these farmers should be supported in better driving agricultural projects and adapting to market demands. At the same time, all parties must strengthen awareness of data protection on agricultural information platforms. Vocational training programs should incorporate modules on information security to enhance high-quality farmers' awareness of data protection.

Regarding the vocational training system, we must integrate talent development across all levels—from associate's degrees to bachelor's, master's, and doctoral degrees. In curriculum development at institutions at various levels, courses on digital agriculture technologies should be incorporated to cultivate multidisciplinary talent. Multiple stakeholders should jointly establish an operational mechanism for cultivating high-quality farmers to improve the quality of training. Agricultural vocational colleges should leverage municipal industry-education consortia and sector-specific industry-education integration communities to strengthen cooperation and exchange among vocational colleges, research institutes, industry associations, and agricultural enterprises. By sharing resources, they should create training platforms to enhance the digital literacy of high-quality farmers and elevate the quality of their cultivation.

4.3 Stimulating Farmers' Internal Motivation

China is currently at a critical stage in the modernization of agriculture and rural areas. As a key driving force behind this modernization, high-quality farmers play a vital role. Although

the country places great emphasis on their training, it is only through the farmers' own development that they can truly contribute to the modernization of agriculture and rural areas. Therefore, when cultivating high-quality farmers, China can propose feasible recommendations in three areas: encouraging farmers to establish green agriculture projects, stimulating their enthusiasm for participating in cooperatives, and preserving agricultural culture.

To achieve the goal of agricultural and rural modernization, China must rely on endogenous development in agriculture and rural areas, and the construction of an ecological civilization is a crucial pathway to ensuring this endogenous development. Therefore, the government should intensify publicity efforts regarding green agriculture to help high-quality farmers better understand relevant policies and strengthen their education on ecological civilization. The government encourages farmers to establish green agricultural projects, yet such initiatives cannot succeed without cooperation among multiple stakeholders, including the government. The government needs to establish long-term incentive mechanisms, strengthen interdepartmental collaboration—particularly with the finance department—broaden funding channels, increase subsidies for green agricultural projects and agricultural insurance coverage, and provide financial support for high-quality farmers participating in green agriculture to alleviate financial pressures and reduce agricultural losses. On the other hand, the government should accelerate collaboration with diverse stakeholders, including agricultural colleges, agricultural enterprises, and research institutes, to expedite the research and development of green technologies. These technologies should be applied to agricultural production activities to help farmers reduce pesticide use and minimize environmental pollution. Farmers themselves must cultivate environmental awareness, actively adopt green agricultural technologies, and establish green agricultural projects. They should steadfastly pursue the path of green and sustainable agricultural development to promote the positive advancement of ecological civilization in rural China.

The carrying out of organization for farmers is one key method of reaching rural revitalization within China. As the core strength of countryside communities, farmers can realize their own potential through joining farmers' cooperative organizations, actively take part in countryside public affairs, cultivate a feeling of collective identification, and together push forward the development of rural areas. The farmers who own high-level skills many times encounter difficulties such as late obtainment of agriculture-related information, insufficient fund support, and technique deficiencies when they carry out agriculture-related production activities. Farmer cooperation organizations can assist these peasants reduce economic dangers, make easier the getting of farming information, and give technology help, therefore let them join more effectively in farming production. Farmers who have high technical abilities play a guiding function inside the agricultural cooperative organizations; when they themselves have obtained abundant development, they help other peasants in the village, hence they promote the ability of theirs to push forward industrial construction. The raising of farmers' economic income has a helpful effect on the provision of local work chances, the betterment of their living conditions, and at the same time it pushes forward industrial combination and hence stimulates the growth of rural economy.

As the motive force that propels the modernization of China's agriculture and rural zones, farmers—when their material demands are satisfied—also go after the enrichment of the spirit. The high-quality farmers are acting as the example models in the work of keeping rural culture and agricultural traditions. They ought to cooperate with related organs to strengthen the propagation of local traditional culture, safeguard intangible cultural heritage, blend cultural activities into the daily life of farmers, satisfy their spiritual demands, cultivate a good cultural atmosphere, and together construct harmonious and beautiful countryside

communities.

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