Technology Training

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The implementation of technology training is essential to promote the commercialization of research achievements, and can play a crucial role in poverty alleviation.

Keywords: rural poverty-stricken household ; technology training ; forest-related income

1. Introduction

Science and technology constitute a primary productive force, and transforming scientific and technological achievements into real productive forces through scientific and technological promotion and training is an important way to lift farmers out of poverty and increase their income, and it is also the main means to improve the overall quality of poverty-stricken farmers. The “13th Five-Year Plan” for Poverty Alleviation issued by the State Council stated that science and technology should be implemented for poverty alleviation, promoting the transformation of scientific and technological achievements to poverty-stricken areas, and increasing the promotion and training of agricultural and forestry technologies in poverty alleviation in the agricultural and forestry industries. Poverty elimination through scientific and technological training is one of the important measures designated by the National Forestry and Grassland Administration to help poverty-stricken counties. Through the promotion of forestry technology, technical personnel were organized to conduct technology training at the grassroots level, helping local poor farmers to improve their forestry production and operation technology and capabilities. In the context that China attaches so much importance to poverty alleviation through science and technology and the widespread development of agricultural and forestry-based technology training in poverty-stricken areas, there are questions that are worthy of our in-depth discussion, including: what is the effect of technology training on poverty alleviation and income increase for poor farmers? How much does it contribute to the forest-related income of the poor? How to carry out scientific quantitative assessment? The answers to these questions are also of certain reference significance to China’s poverty alleviation efforts and the National Forestry and Grassland Administration’s designated assistance work.

2. Agricultural Science and Technology Training

In the existing research, a large number of domestic and foreign scholars have discussed the content of agricultural science and technology training. For instance, there are some studies on the effects of participating in agricultural science and technology training for farmers. Zebo Ma believe that technical education is more useful for farmers than the implementation of a broad strategy of universal education and various professional education strategies [1]. Mukesh Singh et al. [2] intensively studied the impact of training, and organized various trainings work in KVK Rajgarh according to needs. They concluded that these trainings are helpful to increase the level of knowledge of the farmer’s regarding agriculture technology. The suggestions for effective trainings in relation to increasing agriculture production are also presented in the paper.

Bayissa D D pointed out that agricultural science and technology training for farmers will have a great impact on the transformation of traditional agriculture, and the enhancement of farmers’ knowledge level and operation ability can promote the improvement of agricultural production efficiency [3]. Yao Pan et al. [4] evaluated the causal impacts of a large-scale agricultural extension program for smallholder women farmers on technology adoption and food security in Uganda and found that eligible farmers used better basic cultivation methods and achieved improved food security. Their results highlight the role of information and training in boosting agricultural productivity among poor farmers and, indirectly, improving food security. Xu He and Takeshi Sakurai [5] assessed a technology training project in Northern Ghana. Their results are as follows: First, the training project successfully improved the adoption rates of the technologies, such as modem varieties, etc. Second, the adoption rates became higher in villages where longer time had passed since the training. Third, inter-village diffusion of technology took longer time than the intra-village one. Yuhong Zhou pointed out that the agricultural science and technology training that “varies from person to person and adapts to local conditions” can

make it easier for farmers to accept and master the use of agricultural science and technology, play a positive role in improving the quality and yield of products, and further meet the high requirements for agricultural products in the process of market changes [6]. The Outlooks On Pest Management Group studied how education and training in science and technology can be used to improve agriculture and alleviate poverty in Africa [7]. There are many studies on how agricultural science and technology training can promote the growth of farmers' income. Fonta et al. believe that by integrating science and technology into the production process, Malawian farmers can effectively improve agricultural production efficiency and obtain a higher income [8]. Schreinemachers P et al. [9] quantified the effect of training in off-season tomato production on the income and pesticide use of smallholder vegetable farmers in southwestern Bangladesh. The results showed that training increased net household income by about 48% for the average smallholder vegetable farmer, and farm households who discontinued using the technology in the second year also experienced significant income gains from the training. Huaning Chen [10] analyzed the current situation, demand, and performance of Chinese farmers' science and technology training, and found that the participation rate of Chinese farmers' science and technology training is low, but the desire to participate is strong. The most needed training for farmers is production technology training. Science and technology training improves the output of farmers' grain and other crops, and increases farmers' household income.

Hui Qiao et al. [11] used the two-stage estimation and maximum likelihood estimation in the treatment effect model to empirically study the impact of agricultural technology training on Farmers' agricultural income. The results showed that participation in training has a significant positive effect on the increase of agricultural net income. Dan Pan's research results based on micro-farmer household survey data in seven provinces in China showed that the average logarithm of the average income of households participating in agricultural technology training is only 0.151 higher than that of non-training households, and the effect of agricultural technology training on rural residents' income is limited [12]. Regarding the research on agricultural science and technology training models, Zhengzhou Zhao et al. conducted a relatively comprehensive study on Chinese farmer training from the perspective of theoretical analysis, and concluded that the existing training models include: field conduction type, typical demonstration type, project promotion type, talent cultivation and media communication-based farmer training model, etc. [13]. There are some studies on the factors affecting farmers' participation in agricultural science and technology training. According to the attribution theory, Giannoccaro G et al. believe that the external factors that affect farmers' participation in agricultural science and technology training mainly include training methods, training content, training time, training teachers, and government policies on farmers' science and technology training [14]. Zemo K H et al. analyzed that the factors that affect farmers' demand for participation in science and technology training include age, education level, income level, level of part-time employment, agricultural production scale, government support, and the degree of regional industrialization [15]. Domestic scholars have found that the main factors affecting farmers' acceptance of science and technology training are gender, age, education level, economic conditions, social capital, awareness of technology and training, training experience, and government services, etc. [16][17][18][19][20].

In the study of non-agricultural vocational skills training, Fonta et al. [8] believe that compared with the macro education model, technical education, and vocational skills training are more helpful to the rural population. It also further explains that more attention should be paid to increasing education and vocational training programs for farmers' non-agricultural employment. Sampson Tawiah et al. [21] investigated and reported on the strategies for introducing Information and Communication Technology Training in the teaching and learning of rural women through the lens of the human capital theory. The study concluded that the introduction of ICT in the curriculum of rural women can ensure their socio-economic transformation. Wanchun Luo, Xiaonan Li and others [22][23] analyzed the status of Chinese farmers participating in agricultural technology training and non-agricultural vocational skills training.

The results all show that compared with agricultural technology training, non-agricultural vocational skills training has an impact on farmers' income, and the effect is greater. With regard to forest-related scientific and technological training, experts and scholars have mainly studied the needs and contributing factors of forestry production technology by forest farmers, application of forestry technology by forest farmers, and the effect of technical training on income growth of oil tea farmers [20][24][25]. In summary, we found that a large number of scholars have conducted research on farmers' participation in agricultural science and technology training. There are relatively few literatures on the analysis of the effect of technology training on farmers' forestry income, and there is almost no research on the impact of poor farmers' forestry income.

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