Existing Problems and Recommendations for Cultivation of Agricultural Science and Technology Talents in China

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Abstract China is a large agricultural country. Healthy and rapid development of agriculture plays an important role in overall socialist construction of China. To realize sustainable agricultural development, cultivation of agricultural science and technology innovation talents should be strengthened. Through analyzing existing problems in cultivation of agricultural science and technology innovation talents and combining actual situation of China's agricultural development, this paper came up with pertinent recommendations for strengthening China's agricultural science and technology talent cultivation, including improving agricultural science and technology innovation talent cultivation system, implementing "government - industry - university - institute" talent cultivation mode, speeding up construction of experimental teaching demonstration center, and applying human resource theories.

Key words Agriculture, Current situations and problems, Scientific and technological innovation, Recommendations

1 Introduction

After entering the 21st century, China gets both opportunity and challenge in agricultural development. Many high and new technologies are applied in agricultural production, and more agricultural products and services with higher quality are provided to consumers. To feed 1.6 billion Chinese people, China must integrate scientific and technological innovation into agriculture to realize rapid transition of modern agriculture. In the new period, China has made significant achievement in agricultural modernization drive. However, compared with developed countries, China's contribution rate of agricultural science and technology is still not high. In 2012, China's contribution rate of agricultural science and technology progress was 54.5%; overall mechanization rate of cultivation, sowing and reaping reached was 57%; Jiangsu Province's contribution rate of agricultural science and technology progress exceeded 60%, ranking the first place in the whole country, but sill lower than the level of developed countries (80%)[1]. To raise the contribution rate of agricultural science and technology progress, the key lies in cultivation of agricultural science and technology talents. From 2004 - 2013, Central Committee of the Communist Party of China issued No. 1 Document with "three issues concerning rural areas" as the subject for consecutive 6 years, stating ensuring supply capacity of agricultural product with agricultural scientific and technological innovation, making overall arrangement for speeding up agricultural scientific and technological innovation, and stressing accelerating cultivation of agricultural science and technology innovation talents[2]. The *Report to the Eighteenth National Congress of the Communist Party of China* stated that we should speed up the development of modern agriculture, raise the overall production capacity of agriculture, and ensure food security and effective supply of major agricultural products in China[3]. Realizing science and technology driven agricultural development and cultivating agricultural science and technology innovation talents are top priority in implementing strategy of revitalizing agriculture through science and education, and also the only way to realize agricultural modernization. Study on cultivation of agricultural science and technology innovation talents will avoid detours in the process of China moving from large agricultural country to strong agricultural country, and promote China's agricultural modernization drive. Thus, it is of great theoretical and realistic significance for China's agricultural development.

2 Overview of agricultural science and technology innovation talents

Agricultural science and technology innovation talents refer to those talents having strong agricultural science and technology management ability, agricultural research and development ability, special agricultural technology ability, being able to participate in agricultural science and technology activities, promote agricultural scientific and technological development, and carry out creative work[4]. Agricultural science and technology innovation talents include agricultural science and technology research talents and agricultural science and technology extension talents, with the former mainly engaged in agricultural scientific researches and the latter mainly engaged in agricultural science and technology extension. Basic objective of cultivation of current agricultural science and technology innovation talents is to cultivate high quality science and technology innovation talents with pioneering spirit, social adaptation ability of well command of knowledge, lifelong learning ability, higher morality and sense of responsibility, cooperation with others, mind of pursuit for science and truth, well control of modern communication tools, and ability of participating

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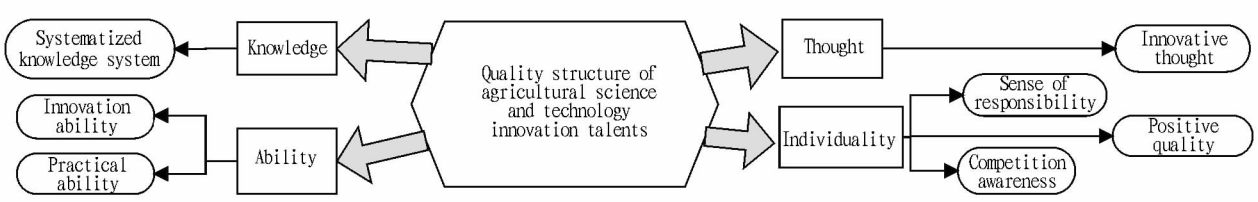
in international communication[5].



Data source: Xue Jinfeng *et al*. Quality Structure and Cultivation of Agricultural Science and Technology Innovation Talents[J]. Higher Agricultural Education, 2013(12): 117 - 120.

Fig. 1 Quality Structure of agricultural science and technology innovation talents

As shown in Fig. 1, the quality structure of agricultural science and technology innovation talents takes on complex system. Therefore, it is required to make multi-dimensional analysis of agricultural science and technology innovation talents from knowledge, ability, thought and individuality. Times are changing and science and technology are advancing, so the cultivation of agricultural science and technology innovation talents should keep pace with the times. In this process, there will be a lot of new problems naturally.

3 Existing problems in cultivation of agricultural science and technology talents in China

3.1 Cultivation system of agricultural science and technology talents is outmoded Limited by traditional restrictive management mode in the planned economy times, current agricultural science and technology talents cultivation and management system is excessively stiff. There is no instruction of talent management from demands and methods, and the current cultivation and management system is steady and delimited method. Such traditional cultivation and management system weakens innovation awareness of agricultural science and technology innovation to a great extent. Inadequate encouragement and guidance directly lead to lack of creativity and remaining state of passive work. Besides, China's agricultural science and technology innovation talent cultivation and education mechanism is excessively planned, lacks flexible scientific research environment necessary for agricultural science and technology workers. In the process of cultivation and education of agricultural science and technology cultivation talents, equal and two-way communication is obviously insufficient. National science and technology managers lack interaction with agricultural science and technology innovation talents, which restricts creative thought of agricultural science and technology innovation talents.

3.2 Cultivation mechanism is imperfect and lacks individuality Influenced by enrollment expansion of agricultural colleges and universities, the cultivation of agricultural science and technology innovation talents is faced with many problems. For example, due to poor teaching and experiment conditions and insufficient practice site, they fail to satisfy demands of more students' agricultural production practice and fail to make students combine theoretical knowledge with actual agricultural production[6]. China's agricultural science and technology innovation talents are weak in applying new knowledge, using network technology and information technology. This seriously hinders improvement of science and technology innovation ability of agricultural science and technology workers. Excessive stressing book knowledge restricts establishment of creative thought of agricultural science and technology innovation talents, while stiff cultivation mode leads to lack of individuality, accordingly influencing the work of weeding out the old and bring forth the new in scientific and technical work.

3.3 Little attention is paid to nonintellectual aspects of agricultural science and technology innovation talents Excellent moral cultivation, strong sense of being the master and strong willpower are necessary characters essential for a science and technology innovation talent. However, little attention is paid to nonintellectual aspects of agricultural science and technology innovation talents. After all, agricultural science and technology research is devoting work. Without excellent moral quality, it will be a disaster for the entire agricultural industry or even for the whole nation. Agriculture is the foundation of China's people's livelihood. It is also a dull and arduous industry. China's agricultural science and technology innovation talents do not have deep understanding of agricultural research environment and have no willpower of bearing hardships and standing hard work. These nonintellectual aspects imperceptibly influence innovation ability of China's agricultural science and technology innovation talents. Therefore, relevant scientific and technological departments should gradually attach greater importance to cultivation of nonintellectual aspects of agricultural science and technology innovation talents, to change the current situation of focusing on intellectual aspects but neglecting nonintellectual factors.

4 Recommendations for cultivation of agricultural science and technology talents in China

4.1 Improving agricultural science and technology innovation talents cultivation system and strengthening guidance function of government The strategy of vitalizing agriculture through science and education is a systematic project needing cooperation of local government and basic organizations. Specifically, China attaches great importance to cultivation of agricultural science and technology innovation talents in university education, implements relevant legal systems, and gradually increases input of scientific research funds. Agricultural colleges and universities

are most practical and convenient places for cultivating agricultural science and technology innovation talents, so government should increase fund input for agricultural colleges and universities and ensure essential material conditions and infrastructure conditions of agricultural science and technology innovation. Compared with agricultural science and technology talent cultivation mechanism in developed countries, relevant laws and regulations provide important guarantee for agricultural talent training, make clear position, content and fund input of agricultural science and technology talent training, and specify responsibilities and obligations of participating parties[7].

4.2 Combining government – industry – university – institute, to realize systematic cultivation of agricultural science and technology talents The cultivation of agricultural science and technology innovation talents is a systematic project. Simply relying on colleges and universities is not enough, and it also needs policy support and financial support of government, as well as cooperation of institutes and enterprises. Since agricultural services have characteristics of public welfare, only cooperation of government, industry, university and institute may cultivate high quality agricultural science and technology innovation talents meeting demands of modern agriculture. Agricultural science and technology innovation is a process of "conception – operation – inference – summary – refining", so the cultivation of agricultural science and technology innovation talents is a constant cycle process. Knowledge obtained in universities and colleges should be applied to production practice, then talents may improve their quality and ability. In this process, government should provide energetic support, colleges and universities and institutes should provide necessary experimental conditions, and enterprises should provide proper training for those talents. This is an important approach to solve the problem of shortage of agricultural science and technology innovation talents. In addition, the cooperation of government – industry – university – institute can greatly reduce costs for knowledge dissemination and transfer and avoid congenital drawback of difficult transfer and dissemination of specialized knowledge in higher agricultural colleges and universities.

4.3 Enhancing experimental construction and teaching Experimental construction and teaching play important role in exercise of agricultural science and technology workers' innovation ability. State-level Plant Science Experimental Teaching Demonstration Center in Hunan Agricultural University has made remarkable achievement in cultivation of innovation spirit and ability in recent years. Using cultivation idea of experimental teaching demonstration center, it is able to encourage students to actively participate in and pursue internal laws and potential connection of knowledge, to really improve students' ability of pinpointing and analyzing problems. Special characteristics of agriculture require that cultivation of agricultural science and technology innovation talents should change from classrooms to greenhouse and seed market. Only in this way, may help them better understand specialized knowledge and improve their theories and skills in practice.

4.4 Bringing into play effect of encouragement to promote cultivation of agricultural science and technology innovation talents Both Maslow's Hierarchy of Needs and Frederick Herzberg's Two Factor Theory (Motivator – Hygiene Theory) indicate that pursuit for higher material income level is the most fundamental demand of every science and technology talent. Providing reasonable material condition and pecuniary reward for agricultural science and technology innovation talents can provide sense of belonging for them devoting to agricultural science and technology work, accordingly devoting to agricultural science and technology innovation with higher vigor and enthusiasm. Material reward is the basis, on which agricultural science and technology innovation talents are eager to realize their achievement and self – value. Therefore, science and technology workers should establish proper objective for agricultural science and technology innovation talents. The incentive theory tells us that coordination between material and spirit incentive can better stimulate potential of science and technology innovation talents. It is recommended to give ample rewards to those agricultural science and technology innovation talents who have made outstanding science and technology achievements, provide them with spirit encouragement, so as to create social environment of valuing agricultural science and technology innovation.

5 Conclusions

China is a large agricultural country, and growth of national wealth is inseparable from rapid and stable development of agriculture. In the 21st century, science and technology play more and more important role in the development of world economy and the development of modern agriculture relies on numerous adventurous and professional agricultural science and technology innovation talents with high skills and quality. In China, there are still many problems in cultivation of agricultural science and technology innovation talents. Therefore, China should learn advanced experience of foreign countries and exploit a new road suitable for China. The cultivation of agricultural science and technology innovation talents is precondition of realizing rapid agricultural development. It will influence the whole process of agricultural modernization. Thus, the study on agricultural science and technology innovation talents is of great realistic significance.

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routes, fund budget and expenditure standard in violation of stipulated criteria, it is recommended to seriously handle relevant organizations and responsible persons and investigate responsibilities of relevant leaders.

3.3 Strengthening organization leadership and implementing the leader responsibility system It is required to strengthen organization leadership, implement the leader responsibility system, and make clear responsibility. The one who dispatches official overseas trips shall take the responsibility. Workers of relevant management department should study foreign affairs management policies in depth, get familiar with policy details, grasp various provisions and requirements, apply theories in actual work, and management official overseas trips from the source. Besides, it should strengthen the supervision. Before the official overseas trips, leaders should speak face to face with persons going abroad, make clear relevant foreign affairs management rules and regulations, set forth specific requirements, and ask them to make written promise. This is an effective guarantee for management of official overseas trips and also the essential part for bringing into play benefits of overseas trips to the maximum extent[3].

3.4 Strengthening discipline education of official overseas trips Strengthening discipline education of official overseas trips is an effective means of improving quality of official overseas trips[2]. The discipline education of foreign affairs can take centralized training, key person talk or individual reminding before official overseas trips. It is required to strictly implement the team leader responsibility system and make clear responsibility and obligations of team leaders. Also, it is recommended to make well preparation before official overseas trips, and get fully understanding and knowledge of basic national conditions, bilateral relations, and safety situation of the visiting countries. Besides, it is not allowed to change staying time, visiting routes, or participate in any activity and conference irrelevant to visiting tasks without approval. In foreign affair activities, it is required to maintain vigilance, keep state secrecy, strictly observe foreign affairs discipline and confidential rules and regulations, and ask instructions and make report, never do what he thinks is right.

3.5 Management after returning to homeland After returning to homeland, personnel of official overseas trips should submit a detailed survey report and passport to their foreign affairs management department, and make public the survey information on related website. Their institutions may organize special lecture and share the survey achievements as necessary. To reimburse the expenses, the personnel should fill in the expense account approved and signed by the leader responsible for the official overseas trips. Various reimbursement documents should indicate expense items, date, quantity, and amount in Chinese and have signature of the person handling the matter. Besides, it should be attached with the Air Transport E-ticket Itinerary, copy of approval letter for official overseas trips, copy of passport (Exit – Entry Permit for Travelling to and from Hong Kong and Macau), and visa page (exit-entry records).

4 Conclusions

With constant expansion of China's opening to the outside world and further deepening of international cooperation and exchange, the official overseas trip will be a long-term task. Making proper plan, examination and approval, and management after returning homeland for official overseas trips will play a more important role in the state, collective and individual, and also play a positive role in scientific and technological diplomacy.

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