



Available Online at ESci Journals
International Journal of Agricultural Extension

ISSN: 2311-6110 (Online), 2311-8547 (Print)
<http://www.escijournals.net/IJAE>

INNOVATING ORGANIZATIONAL SYSTEMS OF AGRICULTURAL EXTENSION IN CHINA¹

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ABSTRACT

The organizations of agricultural extension in China have been gradually diversified over 30 years' reform and adjustment. Currently, the dominant agricultural extension organizations can be categorized into 5 types: government-run organizations, education-oriented organizations, research-oriented organizations, enterprise-run organizations and self-service organizations. This paper comprehensively examines the organizational systems of agricultural extension in China. Suggestions on how to optimize the internal organizational structures, how to encourage the interaction and coordination among different types of organizations, and how to coordinate the relationships between organizations and external environment, etc. are proposed.

Keywords: Agricultural extension, organizational management, internal structure, external environment.

INTRODUCTION

In the era of the planned economy, organizations of agricultural extension system in China have the typical "unified multi-linear" feature. After 30 years of reform and exploration, the embryonic form of diversification has been formed. currently the dominant agricultural extension organizations fall into 5 categories, namely, government-run agricultural extension organizations, education-oriented agricultural extension organizations, research-oriented agricultural extension organizations, enterprise-run agricultural extension organizations and self-service agricultural extension organizations (Gao *et al.*, 2009). However, the problems such as blurring positioning of development direction and irrational internal structure of all kinds of organizations still exist, which has seriously hampered the operational efficiency of the entire agricultural extension organization system. Construction of agricultural extension organization system relates to three aspects, the optimization of internal structure, interaction and coordination between the various extension organizations, and the relationship between the organization and the environment. We can say that the organizational system of agricultural

extension is rational when all 3 aspects meet the requirement of reform and development of agricultural extension and form a relatively orderly state. The comprehensive research on the agricultural extension organizational systems will promote the optimization of internal organizational structure, improve environment and function and better organizational system of agricultural extension.

The optimization of internal structure of agricultural extension organization and management: Internal organization includes a lot of factors, such as target, personnel, technology, equipment, level, system etc. Internal organization structure refers to the combination of relationships among these systemic factors inside the organization. The optimization of internal organizational structure refers to the rational and efficient combination of all systematic factors within a certain time to reach the optimal state. The author has taken a static investigation on optimization status of various systematic factors in different organizations (Gao *et al.*, 2009). In this paper, I will simply explain the main problems in optimization and management of internal structure of agricultural extension organizations based on the real situation of China's rural development, the reform trend of agricultural extension and current problems of various extension organizations.

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Government-run agricultural extension organizations:

Now China has formed 5-level agricultural extension system which consists of central government, province, city, county and township level. Extension organizations above county level are affiliated to the same-level governmental administrative departments. Township-level extension organizations are affiliated to superior administrative departments. Some towns set up specific agricultural extension administrative departments, implementing the comprehensive functions of management, law execution and service. Nowadays, China's agricultural extension system and institution is in the phase of transformation and faces many serious problems, especially, in local agricultural extension systems, such as organizational management, personnel structure, funds input, projects management and extension methods and so on, which directly impact the extension and transfer of agricultural science and technology. Therefore, the following issues should be addressed to optimize the internal structure of government-run agricultural extension organizations:

First, reform and improve the grass-roots organizations of agricultural extension system. The reform of agricultural extension system at basic level focuses on the county and township-level extension organizations. The reform of grass-roots units of agricultural extension institutes is a critical issue. Extension stations in villages and towns are specific units of action in science and technology extension. However, there exist problems including shortage of staffs, low salary, poor conditions and the imperfection of institution. Reform of extension station should be emphasized, and the relationship between "vertical and horizontal management" should be dealt with. In some areas with good conditions, the setup of extension organizations can be based on local industry instead of personnel skills to gradually assimilate grass-roots extension workers into the system of civil servants and promote their interests and efficiency of extension.

Second, strengthen the division of labor and cooperation within the system and improve the efficiency of resource allocation through system innovation. The current government extension organization system includes many lines of administrative departments: the Ministry of Agriculture, Department of Forestry, Ministry of Water Conservancy, Ministry of Science and Technology, Ministry of Education, the financial system, material supply system, etc. Reasonably allocating extension

resources not only relates to the function of different levels of extension organizations with existing subsystems, but also relates to the division of labor and cooperation between each subsystem, and more importantly to resource distribution in different departments, regions and industries. It is also very important to perfect the mechanism of resource allocation and the corresponding management system, especially to optimize all kinds of extension personnel training, motivation and evaluation system, improve personnel's business level and arouse the enthusiasm and their creativity.

Third, deepen and expand service content, and improve the methods and modes of service. An important development trend of modern agricultural extension is to transform from pure technology extension, administrative instruction extension to a comprehensive consulting service and mutual communication based on user's needs. The beginning of China's agricultural extension system was similar to US and European extension practices, China mainland started to use the word "agricultural technology extension" after the establishment of new China in 1949, which strengthened administrative instruction extension. Nowadays, in view of international experiences or China's rural development experiences, recovering original meaning of the agricultural extension is the basic trend. Besides agricultural technology, various practical knowledge, techniques and information related to the production and life of rural residents should be listed into the contents of agricultural extension. Furthermore, modern agricultural extension should pay more attention to communication with farmers by various ways of modern agricultural extension and carry out education and advisory service based on the needs of rural residents.

Education-oriented agricultural extension organizations:

Because government-run agricultural extension dominated for a long time in China, agricultural extension by agricultural universities was ignored, which was a big waste of extension resources of universities or colleges. Attention to the following problems should be paid about the management improvement and optimization of internal organization structure of education-oriented agricultural extension:

First, clearly define the essential features and fundamental task of education-oriented agricultural extension organizations. The agricultural extension system of education institutions is a distributed network

of organization. The actors of the network include the central higher-education institutions, provincial universities and colleges, and local vocational colleges and schools. The major function of the network is to provide education and training, promote the application of scientific and technological achievements with the objective of increasing the income and improve the quality of life of peasants and the rural population. Education characteristics of education-oriented agricultural extension organization are emphasized in agricultural extension work, following the ideas and principles of integrated community development and sustainable development in rural areas. The fundamental purpose is to enhance knowledge dissemination and community-level capacity building through systematic combination of intellectuals and peasants, scientific and technological achievements, and the enterprise and users community. The advantage of personnel, technology, information and achievements in agricultural colleges and universities will be fully performed, market mechanism will be introduced, thus existing resources will be integrated. Through multiple-channel and full-range human resources development, the target of "taking the university to the farmers" will be realized. The operation process of education-oriented extension organization must adhere to talent training and technology transfer with the aim of providing social welfare and serving agriculture, peasants and rural areas and the development of regional economy.

Second, optimize the structure of agricultural extension management, give full play of each and every unit inside the system to realize the complementary advantages. Nowadays, the critical problems of university agricultural extension organizations are unclear duty of agricultural extension, chaotic mechanism setup, too many superiors or no management. Many colleges take educational units as extension units, impeding the development of extension work. With the continuous innovation of education-oriented agricultural extension organizations, every part develops its advantages and function during the practice of agricultural extension. In the future we need to endeavor to position and regulate all kinds of extension subjects and make sure that the teachers and students, enterprises and units of high-tech parks can share scientific and technological achievements. Education-oriented extension organizations integrate the functions of education, scientific research, extension, advisory and incubation.

But it is not every staff that must carry out the work of education, scientific research, extension, advisory and incubation. Therefore, it is necessary to position the work of each extension actor, and set up different criteria of assessment and management system, coordinate individual development into agricultural extension organization. Meanwhile, we should set up the sharing mechanism of scientific and technological achievements and make sure technique cooperation of every extension actor.

Third, deepen the management system reform in colleges and universities, innovate extension operation mechanism and implementation methods. To give full play to the initiative of universities in the development and extension of agricultural technology, the market mechanism must be introduced to explore the mechanism to combine project, achievements and enterprises, and the formulation of relevant policies. The position of agricultural universities is not only to educate undergraduates and graduates, but also to cultivate rural entrepreneurs, farmer leaders, professional educators and extension workers. At the present stage, township enterprises and dragon-head enterprises play an important role in rural development of economy. Agricultural universities should integrate various available resources and make use of their current technological achievements, and take the model of university + enterprises cooperation to strengthen self-development and sustainable development, construct and perfect organizational system of education-oriented agricultural extension suitable for our national conditions. The construction of education-oriented agricultural extension service network relies on three levels of educational institutions--national agricultural university, provincial agricultural colleges, agricultural vocational schools and vocational technical school to integrate various available resources. It also needs school's technical information resources and human resources, to transmit advanced agricultural knowledge and technology to rural areas through various methods, including information services of science and technology, technical training and advisory services, technical contract, technical development, technique transfer, techniques as shares, and construction of science and technology-oriented enterprises, etc.. Whichever ways you adopt, the precondition is the reform of university system, the establishment of a new type of human resources

incentive mechanism in colleges and universities, setting post of agricultural extension.

Research-oriented agricultural extension organizations: Research-oriented agricultural extension organizations refer to agricultural extension organizations set up by the institutes of science and research, including extension departments of academy of agricultural science at the levels of nation, province, local cities and other various professional research institutes. The target of extension is mainly farmers and agriculture-related enterprises, The internal structure optimization and management of research-oriented agricultural extension organizations should pay attention to the following issues:

First, change the direction of scientific research management, establish the concept of managing technology. This will need to change the idea from project-oriented to market-oriented. Research-oriented agricultural extension organizations and research personnel must be aware that non market-oriented research is a waste of resources. The competition in the future is not only in the laboratory, but also in the international and domestic market. Therefore, we must pay attention to the management of science and technology. Top management should properly guide differentiation and flow of scientific research personnel, perfect the restructuring of the scientific research institutes and facilitate the transformation of some scientific research personnel to enterprise employees, meanwhile, strengthen the comprehensive evaluation of scientific research personnel. Taking the single knowledge structure and lack of management skills of the existing staff into consideration, it is very necessary to carry out the appropriate training and introduce senior management personnel and professional managers from enterprises.

Second, optimize the setting of units and departments. The internal structure of scientific research unit set by the long-term reference of governmental agencies and institutions, has not adapted to the needs of rural economic development at the present stage. It is necessary to consider local conditions for adjusting the setup of the departments and units, such as adding units of agricultural products processing, research units of marketing, industrial economics and trade.

Third, innovate management system and regulations. For a long time, research institutes have followed traditional management system in the form of "career

management + operator control" mode, and reform of state-owned operating assets management and intellectual property were lagged behind. Therefore, we must change the concept and mode of the traditional management, and restructure enterprises in accordance with requirements of the modern enterprise system. This requires a clear property right system. The reasonable elements of enterprise property should be defined according to the characteristics of industry competition and the conditions of the enterprises. At the same time attention should be paid to the corporate governance structure and the building of enterprise culture, based on scientific and technological advantages, and the market situation. In addition, standardized evaluation system, incentive mechanism, supervision, balancing mechanism should be set up to innovate the incentive and distribution system. in order to research and adjust interest pattern of personnel at various levels, give consideration to efficiency and fairness, design performance-based salary system for senior managers of enterprises , and make the technical transformation proceeds benefit the masses of workers.

Enterprise-run agricultural extension organizations: Enterprise-run agricultural extension organizations refer to agricultural extension agencies set up as enterprise or company, aiming at increasing the economic benefits of the enterprise. The service clients include product consumers or raw material providers, mainly professional farms or farmers. Enterprise-run agricultural extension organizations need to pay attention to the following problems in internal management:

First, pay attention to technological innovation and institutional innovation. From a long-term point of view, the key to enterprises' sustainable development lies in technological innovation. The input capacity, implementation capacity and output capacity of technological innovation of agricultural enterprises in China are not balanced at present (Gao *et al.*, 2008). More attention should be paid to exploring and promoting the expanding capability of product related technology to other product areas, after-sale customer service capacity, sales network and marketing capability, consummation degree of incentive mechanism innovation, market research and development ability, the frequency of technological innovation, customer management capability, enterprise R & D funding level. In the process of technology innovation capability

building of agricultural science and technology enterprises, the key tasks are the construction of the enterprise independent innovation platform and the mechanism of independent innovation. A good independent innovation platform system can provide good environmental security for sustainable technology innovation, market innovation, culture innovation and knowledge innovation, so that enterprises can continuously strengthen the innovation capacity, reduce the risk of innovation, improve the technological level of products and the competitive advantage. In transition period, market economy system is not perfect, which is the bottleneck hindering the technology innovation and sustainable development of many China's enterprises. Enterprise institutional construction involves both formal and informal institutions. Currently, the special attention should be paid to the building of enterprise culture, human resources management, corporate governance structure and internal management system. The human resource management of agricultural science and technology enterprises should emphasize the "team spirit" to realize optimal combination of introduced talents and the original staff. And with the expansion of enterprise, it is necessary to take local conditions into consideration to develop effective means of human resource management, establish market-oriented salary system, concern the occupation career management of staffs, In transition period many enterprises have not formed the stable and distinctive enterprise culture, the formal institutions are not perfect, therefore special attention should be paid to the influence of corporate culture on enterprise innovation and development.

Second, establish risk prevention mechanism, enrich and perfect organizational methods for enterprise extension service. Agriculture is an industry with high risk, which leads to the high risk in agricultural enterprises. It is necessary for agricultural enterprises to enhance risk awareness, set venture capital, strengthen ability in dealing with their business market risk, technology risk and policy risk, at the same time to improve degree of cooperation and information sharing with competitors and service clients. Enterprises should choose their own extension service methods according to the degree of their participation in the agricultural extension service provision. For example, provide technology products and technology services; adopt the integrated methods of combining research, extension, production and sales together, "company + farmer", integrated technology

and marketing service mode and so on. At present, the dominant "company + farmer household" mode face the risk of contract breach, we must improve the relevant system, for example, let farmers buy shares, to ensure farmers and enterprises to form common-interest community.

Third, strengthen the social responsibility of agricultural enterprise. As a part of the society, the fundamental task of enterprise is to provide the best products and service for the society. In a certain sense, social responsibility is the fundamental purpose of enterprises. Agricultural enterprises should recognize that serving agriculture, rural areas and farmers is the fundamental goal of their development. In reality, due to the fierce competition, the consciousness of social responsibility is very easy to be forgotten by the enterprise. A lot of enterprises only pursue short-term economic interests, although it may also have a certain degree of growth, but in the end they do not go further. To achieve sustainable development, enterprises must be certain that their fundamental goal is social responsibility. Therefore, enterprises-run agricultural extension organizations need to change the "profit maximization" service concept in the extension service provision, unite interests of enterprises and farmers to let clients benefit from extension services.

Self-service agricultural extension organizations:

Self-service agricultural extension organizations are a kind of organization formed based on the cooperation of members. Considering the organization's development process, the most representative is the agricultural cooperative organizations formed by farmers. As a new thing which emerged in the rural reform process, self-service agricultural extension organization in China is to help the farmers in self-mastery and application of science and technology. They have played a positive role in promoting the development of agriculture. However this organization itself also exposed many defects and shortcomings. Its internal structure optimization and management improvement in the future needs to pay attention to the following issues:

First, further define the objectives and principles of the extension service. Self-service agricultural extension organization is established based on the values of self-help, self-responsibility, democracy, equality, and unity. Its main objectives include: to improve the degree of organization of farmers, to change the farmers' inferior position in the market competition, to solve the contradiction between small production and big market

and to make up for the shortcomings of rural social service system, and meet farmers' needs for diversified extension services etc. Generally speaking, the development of vibrant farmers' organizations needs to start from the practical goal, easy to be realized, which allows organizations to focus on strengthening internal management. When conditions are ripe, to implement strategic objectives needs to devote more resources and complex management skills. The basic principles involved in self-service agricultural extension organization should be as follows: (1) the principle of mutual benefit. This is the fundamental principle of self-help agricultural extension organizations. Different from other extension organizations, the organization's activities should not be for profit purpose. The organization must meet the needs of the rural population, solve their problems in production and life as the basic organization service. (2) the principle of democratic management. Different from organization of hierarchy, self-help agricultural extension organization is a democratic organization controlled by its members, and thus without strict hierarchy, members actively participate in the organization's policy formulation and decision-making process. (3) open and transparent principles. Credibility is the basic element for survival and development of self-help agricultural extension organizations, therefore, the arrangement of the corporate governance structure, implementation of the major decision-making, management and use of funds and other activities should be implemented based on open, transparent principle.

Second, form reasonable organization structure and decision-making mechanism, and establish the organization system. The sound development of self-help agricultural extension organizations relies on reasonable organization structure and decision-making mechanism including the organization positioning, definition of the aims and objectives of the organization, the setup of organization, the selection of suitable strategy and tactics etc.. In the process of growth and development of self-help agricultural extension organizations, external conditions and internal environment change frequently, so it is necessary to adjust and optimize the internal structure of the organization accordingly to adapt to environmental changes. The standard self-help agricultural extension organizations should follow the basic principles of cooperative system, set up the general assembly and the

Congress, the Council, board of supervisors and executive mechanism. At the same time, farmers should be given the right to vote and to be elected, the right to participate in, to ensure that farmers exercise democratic management rights, establish the right property rights system, interest and risk-sharing mechanism between members and organizations.

Third, strengthen the organization management, perfect the extension service mode and means. Norms are standards and guidelines of the operation of the organization, through which the objectives and the way of organization operation will be identified, and disordered management and waste of resources can be prevented. To promote technological innovation and extension of farmers' organizations, it is of vital importance to make the organization a dynamic and open organization in order to maintain rapid, flexible response to the changes of external environment, raise the capital necessary for innovation and keep close communication between members in the organization and between organization and external environment, in order to obtain the required information. At the same time, it is necessary to establish a culture that encourages innovation and attracts professional technical experts and talents into farmers' organization, so that they become the main force to promote the participation and organization innovation. Besides, we should also perfect extension service mode and means, and strengthen cooperation among scientific research units, colleges and universities, improve the information service, to meet the needs of modern agricultural extension services.

The interaction and coordination among agricultural extension organizations: Interactive relationship between organizations is actually the exchange of social resource, such as, material, energy, knowledge, technology, information and personnel, and coordination of the relationship between them is the main resource allocation. Under the planned economy system, the interactive implementation is usually forced in the administrative organization system under pressure, which so easily leads to organizational energy attenuation and worsen the relationship between organizations, difficult to coordinate. Under the market economy system, the interaction between organizational systems has the main identity of voluntary interaction driven by mutual benefits and common goals. Because of the limited space, this paper is not intended to elaborate

the relationships between various organizations to study the interaction and coordination between the agricultural extension organizations respectively, but to put forward some aspects of interaction and coordination of agricultural extension organization, which should be paid much attention to base on the present situation of China's agricultural extension organization operation.

Correctly handle the relationship between government and non-governmental organizations:

This requires the relevant government departments to change function, avoid excessive administrative intervention on various extension organizations, especially, non-governmental organizations in order to realize the transition from direct instruction and control to supervision and coordination services, to mobilize the enthusiasm, initiative and creativity of various extension organizations. All kinds of extension service organizations should work based on a clear division of labor and responsibilities, to achieve interaction driven by common goals and interests. Only in this way, can we promote cooperation in the competition; facilitate the formation of "pluralistic and integrated pattern" of extension organization system. At present, government administrative extension is occupying the dominant position. In a certain sense, government needs to play the coordinating role and try to make different extension organizations into integration and facilitate the benign interaction. Appropriate administrative intervention is necessary to provide the necessary information, establish the resources sharing platform to develop the rules of the game and encourage farmers to participate in.

Emphasize the link function of the self-service agricultural extension organizations in the agricultural extension system:

The government can make use of the platform of professional farmers cooperatives and other self-help agricultural extension organizations, and explore the effective way of farmer training to improve their overall quality, organization and decision-making ability, social participation, encourage them to use the "company + association + farmers" mode, form effective cooperative mechanism between enterprises and farmers, reduce the benefit loss that asymmetric information brings. At present, some farmer organizations can benefit from the participation of government officials, but it will be necessary to distinguish the support of the government from the

leadership role. The government can entrust farmer organizations, to a certain extent, provide public services, but we also recognize that excessive dependence on government support is not conducive to the independent development of farmer organization. Farmers' organizations need to have good internal governance and management system.

Highlight the roles of enterprise-run agricultural extension organizations in the allocation of resources:

Market economy era creates a lot of opportunities for the enterprises and entrepreneurs. Enterprises play more and more important role in agricultural extension. In the future, the cooperation between "industry, university and research institutes" and cooperation between enterprises and farmers should be strengthened and improved on the basis of emphasizing corporate social responsibility. Through the construction of enterprise independent innovation platform, it is expected to improve the efficiency and effectiveness of cooperative technology innovation and extension. In recent years, some of China's agricultural enterprises have begun to pay attention to the construction of the independent innovation platform. The establishment of independent R & D centers and cooperative laboratory conducting national and local research tasks, cooperation with social research institutions are strengthened, and there are plans to invest part of the funds to carry out independent research. However, many enterprises' attention to the platform construction is not enough; the innovation mechanism is not perfect. The innovation mechanism of enterprises involves many aspects, such as, the driving mechanism, operation mechanism and development mechanism, etc. China's agricultural enterprises should establish a set of effective decision, command, control and information feedback systems, which can mobilize various resources required for innovation, and coordinate various linkages in the process of innovation.

Further improve the combination mechanism for scientific research, education and extension service:

The combination of research, education and extension practices in the US is the most successful system in the world. This system has also been implemented in China for a long time. However, so far, the effect of this system is not very satisfactory. In the future, teaching and research institutes needs to carry out system innovation in personnel management and performance appraisal. Local cooperation as well as the macroeconomic

environment also need to be improved. At the same time, scientific and technological achievements, information and benefit sharing mechanism also need to be established to ensure the cooperation of all different parties.

Promote the interaction between organizations and the construction of extension system through the innovation of extension service mode: In recent years, China actively explored the agricultural extension service mode and methods under new situation. The emergence of "agricultural science and technology 110 hotline", "agricultural science and technology express train", "the agricultural technology dissemination station", "agricultural technology experts compound", "science and technology Commissioner System" and other new service mode is a good proof of the mode innovation.

These innovative practices play a significant role in cultivating diversified providers of extension service and promoting the flow and sharing of the agricultural resources. At the same time, all kinds of organizations innovate their extension mechanism in the process of interaction and cooperation. The system construction has been further improved. In the future, cooperation between government departments, government and non-governmental organizations should be enhanced based on summing up, improving and promoting all kinds of extension models, to create the public service platform of the information, personnel, equipment and other resources, promoting the flow and sharing of the resources in different areas, different departments, different areas and different units.

Interaction of agricultural extension organizations and macro environment: The external environment of agricultural extension organizations includes general environment and task environment. The purpose of researching the environment of agricultural extension organization is to find the effects of environmental factors on the organization structure, function and operation. Generally speaking, the macro environment of agricultural extension includes four factors: political and economic environment, social and cultural environment, administrative and organizational environment, regional and ecological environment. These factors are unable or difficult to control under the extension and service system, but the effect of these factors on operation and efficiency of the agricultural extension system is significant. The macro environment of agricultural

extension organization system is divided into 4 parts analyzed separately as follows (Swanson, 1984; Gao and Zhang, 2008).

The political and economic environment: In the 4 types of the macro environment, the political and economic factors of environment carry out its maximum influence on the efficiency of agricultural extension work of a country or a region. The political environment includes policies and laws, such as the national macro policy, strategy, decisions, plans, programs, laws, decrees, regulations, etc. China already revised the law of agricultural extension in 2012, and more detailed implementation regulations will be introduced in the near future.

Effect of economic environment factors of agricultural extension mainly refers to the level of economic development and structure, for example, economic benefits, market structure, resource base, input and output prices, industrial structure, ownership structure, management structure, technology structure, employment structure, land use structure. A variety of fundamental policy of agriculture, rural management system, land ownership and use rights, the agricultural production responsibility system, all have a significant impact on the agricultural extension.

Social and cultural environment: Social and cultural environment can directly influence the work and activities of agricultural extension organizations, many empirical studies have highlighted the barriers from social and cultural environment during the adoption process of technology. If extension institutions want to work effectively, they must conduct activities at the community level. Extension workers located in the community is very important to the extension work. Positioned properly, they can easily get close to farmers. Farmers have easy access to them, and benefit from the work of extension. Culture and values of rural communities, neighborhood and family also have very important influence on the dissemination of information in the rural community. Power structure and the institution of rural community determine whether large-scale collective action can be successfully organized.

Administrative and organizational environment: Effective agricultural extension work needs a good administrative and organizational environment. To guarantee the efficiency of extension, extension organizations and project implementers should be entitled to participate in the government decision

making and planning. and in the formulation of extension project plan, it is necessary to consider the technical factors, and national policy and other administrative issues. The participation of farmers and farmer households should also be encouraged.

Regional and ecological environment: Many countries have established research and experiment station of crops in different regions and ecological environment. The crop varieties adapt to a variety of ecological environment. Extension institutes in these specific places carry out research activities to establish and maintain effective contacts to stay informed about specific situation of these areas. Farming systems research and extension methods provides an effective means for site-specific research and extension work. Based on the farming system and farmer problem analysis, key research projects, extension staff and researchers are appropriately combined together. The interaction between them may effectively improve the efficiency of agricultural extension. In the future, more regional agricultural extension stations will be established in China and will play more and more important roles at grass-roots levels.

In short, after years of exploration and practice, China's policy environment of agricultural extension has experienced continuous improvement. Ideas about agricultural extension reform and development are becoming more and more clear. These provide a favorable external environment for the construction of agricultural extension system in the future. However, interaction between the organizations and the macro environment needs to be continued. At present, to promote agricultural extension organization system construction, the most important task of strengthening hard and soft environment construction is to ensure the resource inputs, capacity building, institution building of agricultural extension development. At the same time, we need to improve the social environment and market mechanism in the rural areas, promote the flow and effective allocation of resources, create a fair competition and mutual benefit and trust market environment, improve the quality of rural population and their organization, decision-making and social participation capacity based on the improvement of related policies and regulations.

Conclusion and recommendation: With the rural reform and development since 1978, diversified organizations of agricultural extension have been

formed in China. Currently the most influential agricultural extension organizations are mainly 5 types, namely, government-run agricultural extension organizations, education-oriented agricultural extension organizations, research-oriented agricultural extension organizations, enterprise-run agricultural extension organizations and self-service agricultural extension organizations. During the operation in the past years, different problems appeared, which resulted in the ineffective allocation of limited resources in agricultural extension. For the further optimization of internal organizational structure, government-run agricultural extension organizations should reform and improve basic-level agricultural extension system, and strengthen the division of labor and cooperation within the system through institutional innovation to improve efficiency of resource allocation; education-oriented agricultural extension organizations should deepen the reform of science and technology management system, and innovate the operational mechanisms of extension; research-oriented agricultural extension organization should change and optimize departments and units settings, and innovate management system and regulations; enterprise-run agricultural extension organizations should focus on technological innovation and institutional innovation, establish the risk prevention mechanism, and strengthen the social responsibility of agricultural enterprises; Self-help agricultural extension organizations should strengthen organizational management, improve the organizational structure and system, and better the ways and means to improve extension services. What is more, the interaction and coordination among different types of organizations and their environment must be improved.

ACKNOWLEDGEMENTS

This work was supported by the National Natural Science Foundation of China Project "Organizational Proximity and Aggregates in Cooperative Agricultural Extension" (Grant No: 71173219).

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