Importance of developing agricultural technology in a new era

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Introduction

It is a pleasure to address an audience from all over the world! And thanks to IFMA for the invitation to address you. I am very pleased to represent my team to say thank you to the organizers of this conference. Unfortunately I cannot be there in person, but I hope you will find my paper of interest.

What I am going to introduce is the importance of developing agricultural technology in China and the development planning.

In this new period of time, the fundamental way for agricultural development is the advance of technology and the improvement of the farmers' quality. Developing modern agriculture ultimately relies on new type of farmers who are educated, technology-equipped and good at business management. However, currently the agricultural technology level is still very low in China and the quality of farmers is not high either. A lot of agricultural technology achievements have not been introduced to the rural areas. The "last mile" problem in technology extension is rather significant and there is a gap between agricultural technology and the farmers. Among the factors that hinder the access of technology to rural areas, issues like the existing inflexible agricultural technology extension system causing disconnection between agricultural research, education, extension and production, the single national extension system obsolete for the development of agricultural economy, the low scientific and educational quality of the farmers, weak subjective role of

application and extension of new technology have received wide attention and are pressing for solutions. Solving these problems, building a fast and effective agricultural technology transfer channel and expediting the application and extension of agricultural technology achievements is one of the major tasks in new rural areas development.

The Ministry of Agriculture of China is driving China's agricultural technology development mainly in the following three areas:

I. Innovation mechanism as a starting point to actively promote agricultural technology into households

In 2005, the Ministry of Agriculture initiated the implementation of model project of introducing agricultural technology into households ("Project of technology into households" hereinafter). In the two years, the project was tested in more than 560 counties nationwide and more than 500,000 technology model households ("model households" hereinafter) were established, influencing more than 10 million neighbouring farmers. According to statistics, the technology model households significantly increased their yields and income. Crop farming households had an annual average yield increase of over 10% per mu with cost cut and revenue increase of about 100 Yuan/mu. For livestock farming model households, the daily weight gain of pigs improved more than 11% and the overall dairy farm revenue improved more than 10%. The fishing model households and other households inspired by them had an average of cost cut and revenue increase of more than 1,000 Yuan/mu. The model households gradually became the resident "rural experts" who the farmers can see and consult and leaders of farmers' effort in getting rich. Experience has proven that implementing the Project of agricultural technology to households is suitable for the present reality of farmers with dispersed, small-scale operation, and it is the practical need for developing

modern agriculture and the socialist new countryside. The core of “Project of technology into households” is the capacity building of the “model households”, and the innovation mechanism is the key and starting point for pushing forward all the work.

First, through the innovation mechanism, implement government planning and coordination mechanism to explore and establish a fast channel for technology transfer and stimulate the vigor and vitality of grassroots agricultural technology extension system. For various reasons, the existing agricultural technology extension work has the problems of unsmooth and inflexible system, unstable teams, and insufficient support. The problems of the “last barrier” in agricultural technology transfer and the “last mile” in technology extension are rather significant. Meanwhile, because of the separation of agricultural research, education and extension in China and the lack of efficient incentive system, the rapid technology transfer and introduction to households are facing great difficulty. The “Project of technology to households” is implemented to explore new mechanisms and efficient ways to improve the household technology introduction rate and arrival rate and solve the problem of disconnection between agricultural technology and the farmers’ agricultural operation. Using the innovation mechanism as a starting point, the agricultural department at each level reinforced planning and coordination, integrated various resources to establish and straighten out a fast channel for technology transfer. A technology-to-households joint meeting system was normally set up at each level to strengthen the collaboration and coordination of related departments and the integration of various resources. The agricultural extension, educational and research institutions, leading companies, professional associations and the farmers were widely mobilized to actively participate in the project of technology to households. The existing practical technologies were put together as packages. Leading species and key technologies were promoted. The related projects were effectively integrated and preference was given to the model counties. An interconnected working system and mechanism involving ministry, provinces and model counties was formed. A fast channel for technology transfer made of “expert groups – technical

instructors – technology model households – influenced farmers" was established. An agricultural technology extension network suitable for family contract operation was preliminarily formed. All the measures above resulted in the effect of connecting the points, mending the network and gathering talents. The enthusiasm of the grassroots extension workers was stimulated, facilitating the reform and construction of grassroots agricultural technology extension system. Currently, the speed of extensive technology transfer in the model counties was enhanced significantly with a arrival rate of 100% for the leading species and key technologies. The rate of technology transfer was generally improved.

Secondly, through innovation mechanism, implement the system of expert group technology responsibility to explore a new mechanism for technology transfer, encourage the agro-technician to go to the villages and households and expedite technology transfer and application. In the typical technology extension work, only the technology was available, but not the experts. The experts and technology were separated. The project of technology to households hired the technology authorities as chief experts who organized and established expert groups with scientists from the agricultural research, educational institutions and companies in the province and county. The expert group technology responsibility system was adopted. The experts carried their achievements and technologies to work with the extension workers, facilitating the combination of research and extension, and providing strong technical support for the extension work. The road of technology transfer was straightened out. The integration of farming, science and education, and the collaboration of production, training and research were achieved. It changed the old situation of disconnection between research projects and the practical needs from production, lacking of truly useful achievements and technology, slow extension of new technology and the low transfer rate. In the process of technology extension, while unleashing their advantages in technology and achievements, the experts made full use of the access to the actual production, and constantly made technology innovation, establishing a positive mechanism of identifying research projects from production and applying the research achievements back to the production. Up

to date, the Project of technology to households has hired more than 4,000 experts from central and local agricultural research and educational institutions. This project stimulated the enthusiasm of the scientists to go to the fields to give the farmers instructions on production. At the same time, the scientists found their directions for technology innovation by studying the farmers' needs.

Thirdly, through innovation mechanism, implement the system of technical instructor household responsibility to establish a new service mechanism, giving extension workers a stage to play. There are nearly 1 million people exclusively working on the extension of agricultural technology in China, among which 23% are workers at county level and 71.3% are workers at township level. However, because of constantly lack of support, it is still a significant problem that the extension workers couldn't go to the rural frontline, stay there and make contribution. The Project of technology to households selected technical instructors through bidding from agricultural technology extension agencies, research, educational institutions, companies and agricultural cooperatives, and implemented the system of technical instructor household responsibility. About 50 technical instructors were recruited openly in each county. They worked under the leadership and guidance of the expert groups and the technical guidance institutions. Each technical instructor is responsible for directing about 20 model households. Their responsibilities include formulating instruction plan for the model households, giving instruction to the model households to carry out production in the leading agricultural industry, providing technical support in other related industries and processing and sales information of main agricultural products, providing consultation on life and ecological environment to the farmers, and coming to the farmland to give hand-in-hand and face-to-face technical instructions and service at the key stage, in key farming season, at emergency and whenever needed by the farmers. In this way, the connection between technology extension and farmers' needs was established. On one hand, the extension workers have a stage to use their talents, and on the other hand, the farmers' personalized technical needs were answered promptly.

Fourthly, through innovation mechanism, establish an inspiration mechanism to expedite technology extension. Farmers are the main body

of agricultural operation and the main body for building new villages. Villages are looking at other villages, households are looking at other households, and the farmers are looking at the model households. This is the general characteristics of agricultural technology extension work at the present. Using the technology model households to inspire and drive the neighboring farming households is an effective way to expedite technology extension. The Project of technology to households selected about 1,000 model households from 100 villages in 10 townships. With preferential policies, direct subsidiary, technology training and expert instruction, the project supported and trained the model households, improved their learning capacity, self-development capacity and inspiration capacity. At the meantime, the model households were required to promptly and actively spread production experience, technology and information to the neighboring farmers and let the quality seeds, technology, agricultural machineries and information reach the farmers. The Project of technology to households has trained a large number of local technology model households with high consciousness and strong technical skills, giving inspiration to other farmers. In addition, based on model households, model areas were set up in each township so that the technical instructors could see the shows and demonstrations of new species or technology without leaving the township and the farmers could see them without leaving the village. An inspiration mechanism integrating points (model households) and sphere (model areas) was established, expediting technology extension.

Fifthly, through innovation mechanism, implement performance review and incentive mechanism to stimulate everyone's enthusiasm. In order to clarify the responsibility and tasks and stimulate everyone's enthusiasm for work, in the process of implementing "Project of technology into households", contract responsibility system, performance review and incentive mechanism were carried out. Responsibility objectives and technical service contracts were signed between county agriculture administrative departments and the technical guidance institutions, technical guidance institutions and the technical instructors, and technical instructors and technology model households, respectively to clarify each party's responsibility, rights and obligations. Meanwhile, according to "National performance review methods

for project of technology into households", combining bottom-up and top-down approaches, random sample selection, telephone survey and other "blind examination" methods were used in evaluating the performance of the experts, technical instructors, model households and model counties, where the satisfactory of the farmers was a major index in the evaluation. Based on the results of performance review and random inspection by the Ministry of Agriculture, evolving management of the project was carried out to eliminate technical instructors and model households whose performance were evidently unsatisfactory for the project.

Innovation is the inexhaustible power for the development of a business. Standing where we are to look at the distant future, we still need to constantly summarize and innovate new models, new mechanisms for introducing technology to households, establish fast channel for agricultural technology transfer and application, send the technology into all the farming households and provide technology support and personnel supply for the rapid and healthy development of agriculture and rural economy.

Method

II. Strongly support and guide the development of non-governmental technology extension service organizations

The non-governmental technology extension service organizations are the farmers' cooperative economic organizations, professional associations and industry associations that work on technology extension and technology transfer in the rural areas. Compared with the governmental extension service organizations, the non-governmental technology extension organizations are voluntarily established social cooperation organizations for service, production,

processing, storage, transportation and sales of technology by farmers involved in specialized agricultural production. Article 16 of Law of Agricultural Technology Extension states that the State encourages and supports the development of mass technology organizations in the rural areas and encourages their roles in extension of agricultural technology. Mostly without a legal status, the non-governmental technology extension organizations are non-profit organizations with loose interest relationships. They mainly focus on certain leading products and provide pre-production, production and post-production services to the farmers.

Currently, there are more than 150,000 farmers' professional cooperative economic organizations nationwide with 23.63 million members, accounting for 9.8% of total farming households in China. They are inspiring 32.45 million non-member farming households, accounting for 13.5% of the total. In addition, there are nearly 100,000 farmers' professional technology associations and nearly 1 million farmer technicians. The business areas of various non-governmental technology extension service organizations have developed from fruits and vegetables, livestock, aquatic products, forestry to agricultural machinery service, transportation, grain and oil products, water conservancy construction, resource development and handicraft production, becoming an important upholding force in helping the farmers to carry out production and operation.

The non-governmental technology extension service organizations have their unique advantages in performing agricultural technology extension service. The household contract responsibility system currently implemented in China is based on single farming household. The agricultural technology and research achievements can only be transformed to actual production capacity by farmers' effective handling and application. However, because the number of farming households is large and their operation scale is small, it is difficult to popularize technology. There are many problems and difficulties in the current government extension service system due to management system, operational mechanism, funding and other reasons. The function of public

welfare is not sufficiently executed. On the other hand, the non-governmental technology extension service organizations fit the characteristics of small-scale and dispersed agricultural operation and the farmers' way of accepting new technology by imitation. When carrying out agricultural technology extension service work, because of their unique geographic, kinship and direct interest relationships, they can be more easily accepted by the farmers. In addition, with a democratic, flexible and service-oriented operational mechanism, they have strong vitality. The non-governmental technology extension service organizations can mediate the conflicts between the objectives of government technology extension programs and the objectives selected by farmers to fulfill the actual needs of the farmers. And based on farmers' characteristics, personalized, hand-in-hand and face-to-face training and instruction can be given, playing an irreplaceable role in facilitating the agricultural technology transfer and serving the farmers.

Extensively developing non-governmental technology extension service organizations can change the disadvantaged status of farming households when entering the market alone, improve the organizational level of the farmers, increase farmers' independent capability of technology extension and improve the farming households' market competitiveness. It can effectively reduce the farmers' production and operational cost and increase their income. It can optimize the allocation of production elements including labor, land, fund and technology in a bigger scale and wider fields, promoting the strategic adjustment of agricultural structure and the standardized agricultural production and industrialized operation. It can improve the service model and methods of agricultural technology extension, expedite the extension of advanced and applicable technology to meet the diversified needs of the farmers. The extension system of co-existing and complementary non-governmental technology extension service organizations and the grassroots agricultural technology extension service agencies is an important part in building a diversified agricultural technology extension service system.

Undeniably, because the non-governmental technology extension service

organizations, especially various professional associations were started late, no proper regulations and policies were available for guidance. There are problems like small scale, weak power, incomplete systems, low stability and lack of mechanism and driving force for self-development and self-improvement. The first problem is slow development. According to the sample survey by Central Agricultural Broadcasting and Television School, the percentage of farmers participating in various professional associations or farmers cooperative organizations was only 19.1% in 2006. The second problem is small scale. Among 1.4 million various professional cooperative economic organizations, only 140,000 organizations are relatively formal. The third problem is strong government involvement. The rate of organizations associated with government agencies or set up under the guidance of or jointly set up with entities is as high as over 70%. The fourth problem is weak influence. Because of small developed scale, informal internal management, low member quality, backward service means and other reasons, the role played by non-governmental technology extension service organizations in providing services in technology, information, funding, materials and product sales is still limited.

The non-governmental technology extension service organizations are self-assisting and self-administrative farmers associations. The disadvantaged status of their members and the service industry determines that they are disadvantaged organizations and need urgent support from the government. The No. 1 document from the central government in 2005 put forward the direction of actively cultivating farmers' professional technology associations and agricultural technology companies. The No. 1 document from the central government in 2006 required to encourage various agricultural research and educational institutions and non-governmental sectors to participate in diversified agricultural technology extension services. The Law of Farmers' Professional Cooperatives to be implemented on July 1 set out a series of policies in supporting the development of farmers' cooperative economic organizations. In accordance with the requirements, we shall extensively

support the building of non-governmental technology extension service organizations, encourage and guide them into agricultural technology service industry and fields, participate in the infrastructure investment, construction and operation of grassroots for-profit technology extension service entities and constantly increase the agricultural technology extension and transfer capacity.

We shall protect the normal extension service activities and the legitimate interests of the non-governmental technology extension service organization in accordance with the law. The Law of Farmers' Professional Cooperatives gives clear legal status to farmers' professional cooperatives. Like other companies, it is perfectly justified for the cooperatives to register at Industrial and Commercial agencies and carry out various production and operation activities. The non-governmental technology extension service organizations are categorized as farmers' professional economic cooperative organizations. The production, operation, and extension service are under the coverage of the Law of Farmers' Professional Cooperatives. We shall make clear their important status in agricultural technology extension service in accordance with the law, and protect their legitimate interests. We shall enhance the promotion of the Law of Agricultural Technology Extension and the Law of Farmers' Professional Cooperatives and create a nice environment for the development of non-governmental technology extension service organizations.

We shall constantly increase policy support to the non-governmental technology extension service organizations. According to the Agriculture Agreement of WTO, the agricultural technology extension is a general governmental service under the coverage of green box policy. The non-governmental technology extension service organizations are farmers' mutual-assisting organizations specialized in technology extension service for public welfare, deserving extensive support from the government and the relevant agencies, The Law of Farmers' Professional Cooperatives requires the State to facilitate the development of farmers' professional cooperatives through financial support, tax preference, supports in finance, science and

technology, personnel and the guidance of industry policies. These policies should also cover and give priority to the non-governmental technology extension service organizations. The financial departments at all levels shall give certain subsidiary to the productive infrastructure construction, technology introduction, personnel training and the promotion of agricultural products by non-governmental technology extension service organizations. The non-governmental technology extension service organizations' agricultural production, processing, circulation, service and other agriculture-related business activities shall receive corresponding tax preference and fee reduction in accordance with the regulations. On government projects relating to agriculture and especially the agricultural technology extension service projects, the non-governmental technology extension service organizations shall be entitled to the same status and equal opportunities as the governmental agricultural technology extension service organizations. We shall encourage the financial institutions to provide preferential loans to the non-governmental technology extension service organizations for production, operation and extension service activities by providing guaranty, discount and other methods. The governments and relevant departments at all levels shall provide good service, guidance and assistance to the non-governmental technology extension service organizations in registration, business guidance, information, technical training, quality improvement and social benefit support.

We shall try hard to improve the overall quality and service capacity of non-governmental technology extension service organizations. At present, the overall quality of non-governmental technology extension service organizations is low and their influence is limited. Especially leaders with high technical level and strong business skills are lacking. It has become a major obstacle in holding back the development of non-governmental technology extension service organizations. Therefore, we shall carry out multi-channel, multi-form of educational training to improve the members' quality of non-governmental technology extension service organizations, strengthen the bonds within the organizations, and increase the influence and money-making

capability. We shall vigorously implement the grassroots leader training plan, offer more business training to the leaders of non-governmental technology extension service organizations to improve their science and technology level as well as management capability, and in turn to drive the development of the entire organizations. We shall implement the rural practical personnel training project, improve the scientific and educational quality of the farmers, train all kinds of practical personnel who will be staying in the rural areas for non-governmental technology service organizations, and make various non-governmental technology extension service organizations to become important platforms for gathering various types of rural talents. By formulating preferential policies and measures, we shall strengthen the connection between agricultural research institutes, colleges and universities, or technology extension agencies and non-governmental technology extension service organizations, giving them instructions and assistance in doing their work. We shall encourage the urban talents and intellectual resources to participate in the non-governmental technology extension service business.

We shall reinforce the standard management of the non-governmental technology extension service organizations. Nurturing and supervising at the same time is the fundamental guideline for the management of Chinese non-government organizations. On the basis of vigorously developing non-governmental technology extension service organizations, we shall strengthen the supervision and standardize all their behaviors. We shall expedite the reorganization and reconstruction of the existing non-governmental technology extension service organizations, help them to set up self-disciplinary mechanism, straighten out the relationship between non-governmental technology extension service organizations and other rural organizations, further standardize the organizational bylaw, and legally perform activities within the mission and business scope defined in the bylaw. We shall establish and perfect democratic management and financial management regulations and systems, perfect the organization operational mechanism and interest distribution mechanism, guide the non-governmental

technology extension service organizations to carry out standardized operation in regulations and systems, organizational structure, operational mechanism, interest binding mechanism and business management, gradually expand the power of non-governmental technology extension service organizations, and effectively bring into full play their important role in the development of modern agriculture and building socialist new villages.

III. Respect agricultural technology extension workers and support technology extension work

The importance of the agricultural technology extension work is unquestionable. However, for many years, the agricultural technology extension work has been unsatisfactory in China. According to our Agricultural Technology Department's observation, besides the frequent change of agricultural technology extension system ("floundering") and serious lack of investment for extension work, the agricultural technology extension workers not getting their due respect is also an important reason. At present, the "Project of technology into households" is progressing. Solving this problem well can be help greatly in stimulating the enthusiasm of the technical instructors and experts.

1. Problem in respect to "respecting agricultural technology extension workers"

There are two types of agricultural technology extension workers, full-time and part-time. The former mainly refers to the agricultural technology workers from the technology extension departments in the agricultural system at province, prefecture, county and township levels. On receiving due respect, both types of workers are facing many problems, but the problems appear very differently. For the full-time workers, guaranteeing their responsibility, right and interest to be in line is the greatest support and respect for them. A few years

ago, in the so-called “agricultural technology system reform” at some places, some department leaders did not know or did not respect the international rule of agricultural extension as public goods, did not perform deep investigation and study, did not listen to the voice of farmers, grassroots rural officials and the professionals of agriculture; they forcefully drove technology extension to the market and let the agricultural technology extension workers to earn their own bonuses, and even “tore down the temple” or “weaned the baby”. Some weird stories of soil and fertilizer stations crazily selling fertilizers and the plant protection stations diligently selling pesticides happened. Under this kind of drastic strikes, the Chinese agricultural technology extension business once sank into a dead end and only existed in name, not to mention the least respect for the agricultural extension workers. In 2006, “State Council’s opinions on deepening reform and reinforcing construction of grassroots agricultural technology extension system” was released and the above situation is undergoing some comforting change.

On the other hand, it should be pointed out that the total implementation of household contract responsibility system in rural areas and the market economy environment have made the old agricultural technology extension methods basically obsolete. Under the new situation, the professionals of agriculture have to constantly improve their own quality, service quality and extension methods in order to win the respect from the farmers, grassroots rural officials and the whole society.

Here is a significant problem, how to ensure the opportunity of re-education and the corresponding condition for the agricultural technology extension workers at the level of mechanism.

Being called the “poor people’s economist”, Nobel Prize laureate, American development economist Schultz refuted the opinion once popular in the international development society that the developing countries are lack of resources and unable to transform the traditional agriculture. He clearly pointed out that as long as putting “in human capital” to the agriculture in the

developing countries, no matter how scarce the resources are, the transformation of traditional agriculture still can be accomplished. The human capital is different from human resources, formed only after investing into farmer education, agricultural research and extension. Labor is the most active factor in productivity, then the building of human capital should naturally be the most fundamental part of agricultural development. Unfortunately, in the past only the materials were getting attentions in the agricultural capital construction in China, but not the human. Funds were generously given to water conservancy and farmland facilities projects, while the funds for training farmers and the professionals of agriculture at the frontline of agricultural production was never listed.

It must be sharply pointed out that the above mistake in understanding has made the special funds of re-education and improvement for Chinese professionals in agriculture not available for a long period of time. It is seriously constraining the improvement of the extension effect.

As a leader of an expert group for Ministry of Agriculture's Project of technology into households, I made hundreds of face-to-face investigations with county or township professionals of agriculture in the testing county in these three years. When asked about questions like "did you have any opportunity to attend relatively formal training since you started to work", nearly 99% of the answers were negative. This situation is shocking.

"Technology into households" is not only a fresh matter to the grassroots professionals of agriculture, but also a serious challenge to their knowledge quality and technical level. The old way of having a meeting in the county and generally talking about technology is not working anymore. In the contrast, it is required to take the technology into households and arrive there, face the farmers, hold their hands to teach them and receive their evaluation. These are unprecedented challenges to the professionals of agriculture. Therefore, the demand for re-education and improvement from the professionals of agriculture is highly pressing.

We hereby call on the authority concerned to attach great importance to this big issue of knowledge renovation of the professionals of agriculture. There are many ways of doing this, including:

-- Frequent (regular) training, both “going up” and “going down”. “Going up” means gathering professionals of agriculture from county and township in prefecture (city) during slack farming season or before certain major farming activity to receive short-term (one week to several weeks) of special training from experts who are familiar with the local situation.

-- Provide opportunity of systematic study to some people, using appropriate ways of combined theory and practice to improve the quality of the extension workers. For examples, full-time or part-time study in a master’s degree program in extension major. Empower them with more domestic and international extension new theories, new approaches and new methods through systematic training and improve the communication skills.

In order to ensure the quality of study, the key is to selection and training of qualified trainers. This is directly related to the organization of part-time force to be discussed in the next section.

2. “Respect for Those Who Extends Agricultural Science and Technology” Calls for Mechanism Reform

There is a social force that cannot be neglected in Chinese agriculture promotion, i.e., the so-called part-time agricultural extension workers, who are mainly from agricultural scientific research institutes, universities and colleges. At present, in the extension of agricultural science and technology to farmers, it is mainly those chief experts at levels of ministry, province or county who undertake the tasks of determining main promotion breed, leading technology, establishing and examining implementation and promotion scheme as well as giving particular guide to the grass-roots technical instructors. So we can say that they are playing an indispensable role.

In China, however, there exist deep-rooted problems with how to respect and support the part-time extension workers of agricultural science and

technology. Mainly speaking, the public opinion atmosphere of society and personal working unit, together with the related evaluation, promotion and incentive systems all discourage more research personnel and teachers from voluntarily going in for agricultural extension.

The hidden separation of agricultural education, research and extension departments has been buried since the early period of Liberation when China was “learning from Soviet Russia”. To do extension work in agriculture research institutes, universities and colleges was looked down upon. Those who contribute to promotion are seen as incompetent in research or teaching. Although they may realize glaring achievements in the work, they cannot escape being labeled as “low capability.” Despite the fact that the governing departments had insisted putting stress on the connection between research, teaching and agricultural extension, those who really go in for “connection” work usually cannot reach senior titles for their few theses publication and humble English proficiency. Agriculture science is of significant application nature. But many agricultural research institutes and agricultural universities and colleges are still following the evaluation standard of general research institutes and universities and over-stress the SCI thesis publication number. In such conditions, to encourage more research personnel and teachers to devote to agricultural extension and actively take part in agricultural extension is very difficult.

If this situation continues for a long time, not only the agricultural research quality will be negatively influenced, but also the re-study and re-advancing of above-mentioned vast extension workers of agricultural science and technology will be put in a disadvantaged position. The reason is very simple: there are no eligible teachers who are backed up with theory and practical experience as well as knowing the conditions of countryside.

In this regard, the USA’s successful experience can give us references, as it is well known that the country has achieved greatest success in agricultural education, agricultural research and the promotion of agricultural achievement.

The reason behind the success is institutional guarantee. One of the regulations in the USA is that: within state universities (public universities were evolved from the former Agricultural College; laws stipulate that universities must provide consultancy services free of charge to farmers who have questions on agricultural technologies and operation) , processors or associate processors who are engaged in agriculture-involved work are required to undertake more than two duties; moreover, the percentage of the annual time for performing these duties in their total working time is allowed to change, for example, a teacher spends 30% of the time in teaching and 70% in promotion this year, but he may spend 20% of the time in teaching and 80% in promotion next year. The largest advantage for such regulation is that it can help improve the overall quality of teachers, meanwhile agricultural promotion will not be neglected, which can be reflected in the public voice and title assessment.

Second, in the universities in the USA, a prerequisite for appraising a teacher who mainly engages in promotion (supplemented by research work) as professor is whether he is capable to understand the farmers' language and demonstration manner, and to impart the latest agricultural research achievement or other relevant technologies to farmers. It is such capability that Chinese full-time or part-time agricultural promotion personnel lack most.

Furthermore, state universities have an unwritten agreement, i.e. processors with agriculture-involved colleges or departments, need visit the grass-roots places from time to time, and need gather the agricultural promotion personnel affiliated to universities and provide short-term training courses to them. Such move is intended to bring the information on new achievement, new technology, and new equipment, to promotion personnel in a most rapid, understandable and visual way.

Agriculture is the base for national economy, and this is especially true in China, large agriculture power. Agricultural promotion, although its focus is still placed on technology, must perform the function of guiding many major tasks

(including agricultural development and new agriculture construction), and become an important channel for the state to get contact with individual farmers. Thus, there is a long and hard way still ahead for agricultural promotion. We expect that the whole society will respect and support agricultural promotion personnel, and create favorable working atmosphere and condition for them.

To sum up, in the development of Chinese agricultural technology, there is before us a heavy responsibility and a long way to go. We hope the participants will communicate well with each other to learn from the advanced experiences from other countries, in order to make agricultural science education more perfect in China. At last, thank you for listening to me, and I hope for your advice.