

# The Inspirations of Historic Evolvement of “Teaching, Scientific Research, Promotion” System in American Agricultural Colleges upon Chinese Higher Agriculture Education

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**Abstract**—“Teaching, Scientific Research, Promotion” system from American agricultural colleges has crucial effects on the rapid development of agricultural economy. By going through the historic evolution of American agricultural college system, summing up its successful experience in constructing and combining current situation facing Chinese higher agriculture education, certain suggestions are proposed herein for the quality of Chinese Higher Agriculture Education.

**Keywords**—American agricultural colleges; “teaching, scientific research, promotion” system; historic evolvement; inspiration

## I. INTRODUCTION

Since 2004, Central First Document has been focusing on the issues of “agriculture, farmer and rural areas” for 12 years in succession. In 2015, Prime Minister Li Keqiang proposes in government work report a practical settlement of the issues of “agriculture, farmer and rural areas”, boost of agricultural modernization and promotion of development in rural reformation. Under this new stage, agricultural colleges not only assume the responsibility for cultivating pragmatic talents in agriculture, but also undertake a great mission to make agricultural economy prosper. However, due to teaching, scientific research, promotion coming apart in China’s higher agriculture education today, single agriculture education and simple scientific research are far from satisfaction of requirement of modern agricultural development<sup>[1]</sup>. Foreign developed countries, especially America, have developed a wholesome integrated system of “teaching, scientific research, promotion”, making a great contributions to the rapid development of American agricultural economy. By referring to the successful experience from such system and looking at thoroughly the current situation of Chinese higher agricultural education, certain available suggestions are proposed for improvement of higher agricultural education in China as

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required by new socialist rural construction.

## II. HISTORIC EVOLVEMENT OF “TEACHING, SCIENTIFIC RESEARCH, PROMOTION” SYSTEM IN AMERICAN AGRICULTURAL COLLEGES

Accompanied by the issue of a series of bills, “teaching, scientific research, promotion” system came into being on a gradual basis. Upon the victory of War in North America, America was on a path to independent development. At that time when all things needed to be restored, agricultural production had been left behind seriously, and picking up the development of agricultural education was a top priority. Therefore, in 1862, *Morill Act* was established. By way of land-grant, the government encouraged each state to set up agro-industry colleges where land-grant agro-industry derived and developed quickly ever since. The issue of this bill held landmark significance in the history of American higher agriculture education, establishing a system of agricultural talent cultivation through land-grant colleges which provide important talent assurance for post-war American agricultural rapid development.

With land-grant colleges growing, positioning for talent cultivation target and curriculum setup become problems pending for settlement. As a result of the difference across regional agricultural development, different agricultural talents under requirement and a wide range of problems farmers came across in actual production process, only by agricultural scientific research and practice could land-grant colleges make research results tuned to agricultural production, improve curriculum content, and develop pragmatic talent to solve actual problems for real during agricultural production. But the colleges established through land grant were short of funding, American government issued *Hatch Act* in 1887, stipulating by government grants assisted states in establishing agro-trial stations which were based on land-grant college. This bill made land-grant college to form a system of agricultural scientific study through agro-trial station, a huge inspiration for teacher’s

motivation to conduct scientific research. As a result, abundant achievements were gained; the goal for talent cultivation was defined more clearly; curriculum setup stood more to reason. All of these provided core technical assurance as to the booming of American agricultural economy.

As time went by, drawbacks were increasingly apparent from preference of agro-trial station to research over promotion. Research results were not timely promoted and transformed. Smith-Lever Act of 1914 had managed to solved this problem, providing that agro-trial stations shall take an active part in agricultural technology promotion; land-grant colleges shall establish scientific and orderly agricultural promotion system, regulate employment quality of involved persons, apply research results to agricultural production timely and train farmers to grasp advanced agricultural knowledge and practical skills. The increasing improvement of promotion system raised transformation efficiency of scientific research achievement and famers' overall quality, contributing a lot to sustainable development of American agricultural economy.

Through issuing a series of bills, "teaching, scientific research, promotion" system in American agricultural colleges came to establishment and constantly improved. Such system has profound influence on American higher agriculture education and agricultural economy, making American develop into a nation with most developed education and most advanced agriculture from its original emulation of European higher education pattern around 200 years or so.

### III. SUCCESSFUL EXPERIENCE FROM "TEACHING, SCIENTIFIC RESEARCH, PROMOTION" SYSTEM IN AMERICAN AGRICULTURAL COLLEGES

#### A. Wholesome agricultural educational policy and diverse sources of funds

From the historic evolvement of "teaching, scientific research, promotion" system in American agricultural colleges, it could be told that America constantly regulated agricultural education by legislation and timely adjusted relevant policies in light of development requirement from different times in order to form sound agricultural education policies, which provided rules and laws for American agricultural colleges to adhere to and abide by and so embark on a path to standardized development. In addition, diverse sources of funding offered important security for the fast development of American higher agriculture education. Such sources mainly included specific grant and donation from federal government, state government and regional government, tuition, sales in college and other income, funding from private companies. Sufficient funding sources ensured the implementation of agricultural policies, promoting constant reformation in higher education and sustainable development of agricultural economy.

#### B. Special operation mechanism making teaching, scientific research and promotion an integrated system

Though the agro-industry colleges, trial station and promotion station of United States were established based on different acts, the operation of the three departments was under the uniform leadership of agro-industry colleges. Such

operation mechanism allowed teachers to perform agricultural research and practice in trial station while they're engaged in agricultural teaching. The achieved results not only enrich course content and cultivated high-quality agricultural talents with strong capability in practice, who, more importantly, could apply research results in agricultural production via promotion station [4]. Moreover, through research, teachers made subject more specific and pragmatic and published what they gained in writing to benefit much more. This special operation mechanism had completed central management of agricultural teaching, research and promotion and so made teaching, scientific research and promotion an integrated system.

#### C. Emphasis on the service function of universities

Modern university has three major functions: teaching, scientific research and service. The establishment and improvement of America "teaching, scientific research, promotion" system and the generation of "Wisconsin concept" from original Morrill Act at last established the service function of university towards society and industrial and agricultural production[5]. The issue of Morrill Act signals American government's intervention on higher education. As land-grant colleges grew, more applicants gained a learning opportunity. "The Concept of colleges open to everyone"[6] from Wisconsin University allowed higher education to benefit millions of household, and thus advanced generalization and expansion of higher education. Agro-industry colleges kept high-quality talents coming to agricultural production, improving agricultural technological level. Meanwhile, by a variety of training and promotion enhanced farmer's overall quality and solved problems farmers had during actual production. American colleges had truly made service for agricultural production and society as their most important function.

### IV. CERTAIN FAVORABLE SUGGESTIONS

From holding a rigid and slow attitude to learn from the world, Chinese higher agriculture education has gain outstanding achievements. By delving into "teaching, scientific research, promotion" system in American agricultural colleges can help find out problems existed in our higher agriculture education, for instance, unsound agricultural policies, disconnection between teaching, scientific research and promotion, lack of effective organization approach to combine agricultural colleges and scientific research institution, defected operation mechanism, slackness to promote scientific results. Referring to the American system can generate certain suggestions for reference regarding China's higher agriculture education quality.

#### A. Enhancing policy guidance and funding input are essential security

In China, unsound policy for existed agricultural education and lack of funding input are important factors that contain the development of higher agricultural education. America promoted a rapid development of agricultural education by making a series of bills and financial grant, from which we can learn, in particular, enhance policy guidance in terms of

agricultural education, scientific research, promotion to provide wholesome systematic security for agricultural educational development. In addition to this, the country should invest more in agricultural colleges. Currently, it is apparent that agricultural colleges are in a disadvantageous position when competing with other colleges. Only five agriculture and forestry universities were in “211 project” of 2000, none in first phase of “985 project” and two in second phase<sup>[7]</sup>. The government should give more support and funding to agricultural colleges in such projects. Besides, agricultural colleges should broaden sources to raise fund, being proactive to acquire funding support from society and firms.

#### B. Improvement of operation mechanism to make teaching, scientific research, promotion a integrated system

At present, our agricultural colleges, scientific institutions and promotion departments are independent from each other, only holding onto their own responsibility. As a result, agricultural colleges lay much more emphasis on teaching than promotion; scientific institutions solely focus on research and promotion departments are not involved in research at all. No leadership body is for these three departments, leading to the slackness of communication and feedback and so a waste of resource. It is worth learning for us from the operation mechanism that America relies on agricultural colleges to conduct central management of teaching, scientific research and promotion. This management mode avoids research overlap and provides timely feedback and settlement solution to the issues from promotion process, more importantly, allow research results teachers have gained from scientific research to enrich course content, training high-quality agricultural talent and improving agricultural production rate. A wholesome operation mechanism to combine teaching, scientific research and promotion contributes to the connection between agricultural education and actual agricultural production. Through promotion, scientific research results can quickly be transformed into productivity which serves agricultural development in a real way.

#### C. The construction of a newly agriculture-college-oriented agricultural technology service system

In China, the current agricultural promotion system solely dominated by government is not wholesome, revealing more shortages during modern agricultural development which make it necessary to build up an agriculture-college-oriented agricultural technology service system. Certain favorable attempts are made in this respect by some of domestic colleges such as “agricultural technology expert school” from North-western Agriculture and Forestry Technology University, “technology convertible” from Nanjing Agricultural University. Promising results are gained there from. In America, college-oriented agricultural makes teaching, scientific research and promotion combined and coordinated as a whole, which helps to avoid resources waste and repeating research and narrow promotion approach<sup>[8]</sup> and improve transformation rate of scientific achievement. This greatly encourages the rapid development of American agricultural economy. China should integrate current government-oriented and agriculture-college-oriented service system, change the disconnection between teaching, scientific research and promotion and make progress

in terms of reformation of system, making agricultural service system a crucial part in the development of agricultural economy. This new service system can make effective use of existed resources in agricultural colleges and combine the current situation of development of agriculture, rural areas and farmers. By formulation and establishment of demonstration based and rural technology service training organization constructs China-attributed agriculture-college-oriented agricultural technology service system.

#### D. Holding of educational concept “for agriculture, for farmers, for rural areas”, perfection of service function of agricultural colleges to serve new socialist countryside.

Construction of new socialist countryside include agricultural economy, education, technology and overall development of other multiple aspects, which pose a new requirement and challenge to agricultural colleges. It is paramount to display the strength of agricultural colleges in teaching and scientific research resources during construction of new socialist countryside. Agricultural colleges should build up the educational concept “for agriculture, for farmers, for rural areas”, enlarge talent cultivation target, perfect service function of agricultural colleges to provide education, scientific research and social service for new socialist countryside<sup>[10]</sup>. First of all, agricultural colleges send in innovative talents to construction of new countryside through agricultural education, provide a range of training for farmers and enhance farmers’ overall quality and practice ability. Next, agricultural colleges should encourage teachers to conduct teaching research and practice and to be engaged in promotion of study results. Thirdly, agricultural colleges should take an active part in serving rural society and directly in its construction for provision of ideas, strategies and consultancy and spread of advanced knowledge and concept to improve cultural environment there.

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