

## The Role of the China Edible Fungi Association in Promoting the Full-Scale Development of the Mushroom Industry

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**Abstract:** The China Edible Fungi Association (CEFA) is a trans-regional, trans-sector and trans-ownership national organization comprised of enterprises, institutions and individuals from production, processing, circulation, research and teaching areas in the edible and medicinal mushroom industry. The aims of CEFA are to provide services to the stakeholders in the mushroom industry and to its members, to protect the lawful rights and interests of the mushroom industry and the members of the association, and to promote the full-scale development of the Chinese mushroom industry. In recent years, CEFA has devoted itself to strengthening its service functions, and coordinating and promoting the development of the Chinese mushroom industry.

**Key words:** China Edible Fungi Association, mushroom industry development, technology exchange, regional expansion of mushroom cultivation, international collaboration

### 1 Introduction

The Chinese Edible Fungi Association (CEFA) is a trans-regional, trans-sector and trans-ownership national organization comprised of enterprises, institutions and individuals from production, processing, circulation, research and teaching areas in the edible and medicinal mushroom industry. It was established in November, 1987. At present, there are 166 corporate members and 914 individual members. There are 21 edible mushroom associations at provincial and municipal level across China, and there are mushroom associations and professional cooperatives formed in some major mushroom production counties. The aims of CEFA are to provide services to the stakeholders in the mushroom industry and to its members, to protect the lawful rights and interests of the mushroom industry and the members of the association, and to promote the full-scale development of the Chinese mushroom industry. The highest authority organization of CEFA is the assembly of the members or representatives of the members. During the period following the adjourning of a meeting of CEFA, the tasks determined by the assembly are organized for implementation by the permanent unit of the association, the Secretariat.

As a result of very rapid development during the past two decades, China has become the largest country in the world in terms of mushroom production and consumption. At present, the total output of mushroom in China in 2003 had reached 10.32 million tons, accounting for more than 65% of the total world output. The annual export of canned mushroom, dried mushroom, brined mushroom and fresh mushroom was 433,200 tons, earning USD622 million, which is the world's leader. In recent years, the Chinese mushroom industry has developed quickly, featuring the following characteristics: the total output of mushroom increased steadily at the rate of 10-15% annually. The major regions of artificial cultivation have been expanded, gradually from eastern China regions such as Fujian, Shandong, Jiangsu, Zhejiang, Heilongjiang, Henan, Hebei, Liaoning, Anhui, Guangdong, Jilin, and Shanghai to middle and western regions such as Sichuan, Jiangxi, Shanxi, Guangxi, Neimenggu, Guizhou, Yunnan, Xinjiang and Ningxia. The structure of cultivation varieties has been optimized. The output of some precious mushrooms such as *Pleurotus eryngii*, *Agrocybe aegerita*, *Grifola frondosa*, *Pleurotus nebrodensis* and *Agaricus blazei* has been increased, and the varieties under commercial production

have been continually increased. The varieties of mushroom products, such as canned mushroom, dried mushroom, brined mushroom, fresh mushroom, food products, beverages, healthcare products and pharmaceutical products, have all been increased, and the deep processing of mushroom products has been developed. Industries associated with the mushroom industry, for instance, mushroom machine manufacturing, have been developed. Wholesale markets, agricultural product markets, distribution centers, large hotels, special restaurants, supermarkets and other marketing channels sell more and more mushroom products, and the mushroom market is very prosperous. Chinese mushroom products have been exported to 119 countries and regions across five continents. The international technical exchange and training, product exhibits, and trade talks and other activities are increasingly frequent. Some enterprises have established their production facilities abroad.

The rapid development of the Chinese mushroom industry relies mainly on the driving force of advances in science and technology. There have been many important innovations and inventions in the areas of research and development of applied technology, and some research has attained international advanced level. Guided by a series of policies introduced by the Chinese Government, the Chinese mushroom industry is stepping into a golden age in the history of its development. The development of the Chinese mushroom industry has distinct features: these are its labor-intensive and highly efficient nature, and the remarkable economic, social and ecological benefits it provides. The Chinese mushroom industry has not only accumulated valuable experience for its own sustainable development, but has also provided much useful knowledge to other countries and regions. In doing so, it has made important contributions to the promotion of the prosperity and development of the mushroom industry worldwide.

### 2 Recent Activities of CEFA

In recent years, CEFA has devoted itself to strengthening its service functions, and coordinating and promoting the development of the Chinese mushroom industry. By attaching equal importance to both production and consumption, the Association's tasks have emphasized the following aspects:

#### 2.1 Expansion of the regional arrangement, and promoting production towards the west

China is a vast territory with distinct differences in climate and resources among different regions. For a long time, mushroom production in China was mainly concentrated in Henan, Hebei, Shandong, Jiangsu, Heilongjiang, Zhejiang, Fujian and other provinces in eastern China where the economy is relatively developed. In recent years, with the support of governments at different levels, and by organizing and cooperating with local mushroom associations, well-performing enterprises, universities, colleges and research institutions, CEFA has held various meetings and conducted investigations and research in Yunnan, Shanxi, Xinjiang, Qinghai, Sichuan, Guizhou, and Hubei provinces. In these less developed areas, local climate and resources conditions beneficial to mushroom production have been adopted to popularize advanced techniques, realize the expansion of mushroom industry at low cost, and promote the great development of mushroom production in western regions. For instance, in Menyuan County, Qinghai Province, by using local climate conditions with low summer time temperatures, two million bags of *Pleurotus nebrodensis*, *Flammulina velutipes*, and *Pleurotus abalones* were cultivated in summer, prompting business people from Beijing, Shanghai, Guangdong and other places to set up production facilities in this county. A good combination of local resources, capital, technology, information and other production factors was established, cultivation technology in the local area was improved, mushroom output in the local area was increased, and a new way of alleviating poverty and improving the well-being of farmers was provided. The move in mushroom production towards the west has resulted in many praiseworthy achievements; for instance, in 2003 in Shanxi Province, mushroom output was increased by 91.6% compared to the previous year.

## 2.2 Introduction of standardized production, and the move from increased quantity towards increased quality

For many years, CEFA attached importance to the analysis and study of how to keep a healthy and sustainable development of the Chinese mushroom industry in today's world. Today, with advanced societies, plentiful products, and the people's increasingly concern about environmental protection and health, the quality-related aspects of products, such as high quality, hygiene and safety, are of increasing importance. Today, with economic integration and information globalization, international competition has become increasingly intense. For the sustainable and healthy development of the Chinese mushroom industry, we should attach importance to the quality of mushroom products, to realize the leap from quantity increase to quality increase. For this reason, in February 2003, April 2004, and September 2004, CEFA issued a series of documents. These were "Suggestions Regarding Implementing Mushroom Standardized Production", "A Letter Regarding Establishing a Demonstration Base for Standardized Mushroom Production", "Conducting Corporate Research and Development, and Actively Promote Mushroom Standardized Production", "Promote Comprehensively Standardized Mushroom Production, Promote New Development of the Mushroom Industry", and "Evaluation Principle of the National Demonstration Base of Standardized Mushroom Production". Those documents stressed that the implementation of standardized production was the basic way to improve the quality of mushroom products, and a key to strengthening market competitiveness. The documents also made clear that the implementation of standardized production was a strategic measurement to the sustainable and healthy development of the Chinese mushroom industry. To promote standardized mushroom production, in December 2003, September 2004, and January 2005 respectively, CEFA held symposia and meetings for exchanging experience and information regarding standardized mushroom production in Beijing, Guangshui of Hebei Province and other places. The working methodology of promoting standardized mushroom production by corporate research and development was determined at the meetings. The goals for these meetings have been reached in that the participants from corporate research and development exchanged and discussed research on various standards at various levels. They also discussed implementation scenarios with regard to cultivation environments, cultivation and management, circulation, processing, packaging, storage, fresh keeping and transportation. Up to the end of 2004, CEFA has received reports from over 60 enterprises or production base counties implementing standardized production. The awareness of emphasizing on product quality has been enhanced, and standardized production has become a determined goal to the mushroom industry.

## 2.3 Developing a "Dining Table Economy" and promotion of social consumption

The CEFA adheres to stressing both production and consumption in its efforts to promote the greater development of the mushroom industry. The total annual mushroom output in China is more than 10 million tonnes, while the annual export volume is only between 400 to 500 thousand tonnes, and over 95% of mushroom products depend on domestic sales. According to the report, the monthly consumption of mushroom per capita is over 3 kilos in Japan, Korea and Hong Kong. If Chinese domestic consumption were to reach this level, the annual domestic demand would be 48 million tonnes. Therefore, to develop a dining table economy and expand domestic demand is the largest supporting point for the Chinese mushroom industry in implementing the strategy for sustainable development. In April 2003, CEFA issued the main working points of "Making Efforts to Expand the Mushroom Market and Promote Consumption". In May 2003, when the SARS epidemic occurred in China, the Association organized ten distinguished experts and collaborated with the Chinese Fruit Circulation Association and the Chinese Vegetable Association to promote the campaign for "Improve Diet Structure, Eat More Fruits, Vegetables and Mushrooms, Enhance Human Immunity". In September 2003, CEFA joined hands with the China Central TV Station to hold programs on "Culture Week of the Mushroom Diet", introducing cooking methods for mushrooms and propagating nutritional and healthcare functions involving mushrooms.

The programs were shown in CCTV channels 1, 2 and 4. In October 2003 and September 2004, respectively, the first and the second "Mushroom Cooking Competitions" were held, introducing brand restaurants, famous chefs and famous dishes of mushrooms, and the programs were shown on the Beijing TV Station. In November 2004, during the meeting of the "2004 Summit of Harmonized Development of the Chinese Mushroom Industry" in Jiangshan, Zhejiang Province, the well-known Chinese nutritional expert, Professor Hong Shaoguang, was invited to give a presentation on "Mushrooms and Health". All these acts not only stir up positive reactions within the mushroom industry but, more importantly, they popularize knowledge of mushrooms to the consumers, introduce the nutritional values and healthcare functions of mushrooms to the public, introduce easily handled cooking methods to the public, and encourage society to consume mushrooms.

## 2.4 Establishment of the institutional guarantee provided by science and technology to the development of mushroom industry

For many years, CEFA regarded the services of science and technology as its long-term task, and a basic work in the development of Chinese mushroom industry. The journal "China Mushroom Information" publishes monthly about the latest development trends within the mushroom industry and provides advisory technical services. In 2002 and 2003, the Association conducted a series of service works in science and technology: it organized the special inspection and study of the issues surrounding formaldehyde-containing shiitake mushroom; recommended that Dongning County in Heilongjiang Province be listed in the second batch of pollution free food base counties of the Ministry of Agriculture; organized experts to amend "Regulations on Management of Mushroom Spawn" being drafted by the Ministry of Agriculture; and organized experts to compile the "Yearbook of Mushroom Patent and Standards in China and Foreign Countries". In recent years, the Association also conducted various activities such as the recommendation of technology, appraisal of research results, and product evaluation. Along with the development of production, the problems associated with a shortage of technology and professionals are increasing markedly. Therefore, the tasks of providing services in science and technology are becoming more difficult. For this reason, the Association decided to establish the institutional guarantee of services in science and technology. The Expert Committee of CEFA was established in April 2004, and consists of 223 professional leaders and research mainstays from the areas of genetic breeding, resources, classification, cultivation, processing, and mushroom standardization. In 2004, The Mushroom Expert Committee organized seven experts to form an evaluation team to conduct an examination of a new variety of *Tricholoma* in Baokang, Hebei Province, and held the "Promotion and Marketing Fair of New Variety of Chinese Kangbao *Tricholoma*" in the People's Congress Hall in Beijing on 29<sup>th</sup> October. The committee organized several experts to hold a seminar in Beijing regarding "How the Chinese Mushroom Industry Responds to Amendment of the Seedling Law". The committee organized the Edible Fungi Institute of Shanghai Academy of Agricultural Sciences to apply a national research program on "Establishing Fingerprint Technology and Database of Shiitake DNA". The committee also formed an evaluation team to conduct work on the recommendation of mushroom products. The Association established the Professional Technique Appraisal Center of the Chinese Edible Mushroom Association in July 2004, to conduct the technical training and authentication services for the professional qualification of "Mushroom workers". The center conducted training in professional skills for "Mushroom workers" for 77 professionals in order to improve the professional quality and skills of people involved in the mushroom industry. The Association will push further in the aspects of establishing institutional guarantees of providing services in science and technology, information services, advisory services and training services.

## 2.5 Reliance on science and technology, and promotion of production development

During the past two decades, the productivity created by the progress made by mushroom science and technology

is much greater than any time in the past. The extension of improved varieties, substitution of cultivation materials and improvement of cultivation techniques have greatly enhanced the quantity and quality of mushroom products. At present, protected culture technology is developing rapidly, and the application of new materials, automatic control systems and other high technology in mushroom area has become increasingly popular. The Association abides to the principle that development should be based on science, and relies on science and technology to promote production development as a long-term strategic task for the mushroom industry. In the long term, by organizing seminars and other channels, the Association attaches importance to extending new cultivation technology and new varieties, and the utilization and development of new materials. It also attaches importance to combining technical innovation with the practices of mushroom growers, to the exchange of ideas and information with the growers, and to learning from each other. In April 2004, the Association proposed to implement "Engineering of Enhancing Mushroom Product Competitiveness by Science and Technology", and a seven-year goal was set. The year 2004 was designated the "Year of Science and Technology", aiming at mobilizing the whole mushroom sector nationwide to rely on advances in science and technology to advance the development of the mushroom industry. In April 2004, the Association issued the main working points of "Accelerate Advance of Science and Technology, Enhance the Market Competitiveness of Mushroom Products" to the mushroom associations at provincial and municipal levels. From May to September 2004, the Secretariat of the Association issued the document of "Report on Activities of Year of Mushroom Science and Technology". The Director of the Association, Mr. Gu Erxiong, and Executive Deputy Director, Mr. Lu Jieren reported to the Ministry of Agriculture, Ministry of Science and Technology, State Development and Reform Committee, State Standardization Committee and other governmental departments regarding the activities of the year of science and technology, and these works have gained the attention of the mushroom industry and the governmental departments concerned.

## 2.6 Organization of large industrial activities, and establishment of an industrial service platform

China has a vast territory with different conditions. As an industrial association, CEMA sometimes experiences difficulties in fulfilling all its duties completely and attentively. Therefore, every year since the establishment of the Association, it holds nationwide meetings for technical exchange or trade talks, as well as summit and other large scale activities, to introduce experience, set up models, develop production and promote trade using these large-scale activities as platforms. In August 2003, the Association worked with the Yunnan Provincial People's Government to hold "2003 China (Kunming) Mushroom Commodity Exhibit and Seminar on Wild Resources Protection and New Product Development". Over 300 participants, more than 20 research organizations and more than 70 enterprises participated in this activity. In May 2004, the Association held "The Second China (Beijing) Mushroom New Product and New Technology Fair and the Summit of Current Situation of Logistics Industry and International Exchange and Cooperation". These attracted approximately 600 participants. During this period, business people and clients from both home and abroad had good contact and made very good business and trading deals. In September 2004, the Association worked with the Mudanjiang Municipal People's Government of Heilongjiang Province to hold the "The First China (Dongning) *Auricularia auricula* Festival and Seminar on Cultivation Technology of Pollution Free *Auricularia auricula*". The developmental achievements of Chinese *Auricularia auricula* were introduced, and the work of supporting Dongning County, Heilongjiang Province, to set up as a national demonstration county for standardized management of *Auricularia auricula* spawn production was launched during the meeting. In November 2004, the Association held the "2004 Forum on Harmonious Development of the Chinese Mushroom Industry" in Jiangshan, Zhejiang Province. About 400 participants and 40 famous experts from home and abroad exchanged ideas on key issues, technology, circulation, and the strategy of the development of the Chinese mushroom industry. The Association also organized the compilation of the "Proceedings of the 2004 Forum on Harmonious Development of the Chinese Mushroom Industry".

## 2.7 Establishment of close contacts with government departments, seeking of support from government, and assisting government to maintain business order

During the past three years, the Association has actively reported the suggestions and demands of the mushroom industry to the government, and attempted to gain governmental support. The Association reported on the development situation and on issues within the Chinese mushroom industry that urgently need to be addressed, to the Ministry of Agriculture, Ministry of Science and Technology, State Development and Reform Committee, Ministry of Finance and other departments concerned, and gained the attention and support from the relevant government departments. In 2004, amid a disordered situation relating to the production and management of mushroom spawn in some areas, and the issue brought by some countries with respect to China's mushroom exports and intellectual property rights of mushroom spawn, the Association submitted a report to the government and received strong attention to this issue. The Ministry of Agriculture, Ministry of Science and Technology, Ministry of Finance, and Ministry of Commerce have already begun to resolve the issues.

## 2.8 Strengthening of international exchange and cooperation

To strengthen international exchange and cooperation is an important way to promote the development of the mushroom industry. For many years, the Association has attached great importance to international cooperation and exchange in the area of mushrooms, and it is actively involved in international affairs, especially in the areas of mushroom science and technology. The Association has contact and exchange with mushroom institutions in Japan, Korea, the European Union (EU), North America, Australia and other countries, seeking bilateral cooperative programs with these countries. In March 2004, with the approval of the State Council, CEFA officially joined the International Society of Mushroom Science. In January 2005, the Director of the Association, Mr. Gu Erxiong, was appointed Vice-Chairman of the new Executive Committee of the International Society of Mushroom Science. The position of the Chinese mushroom has been remarkably enhanced in the mushroom field of the world. In February 2004, the meeting for launching the mushroom project "Small Mushroom, Big Business", a combined operation between the Association and the EU, was held in Beijing. The determined cooperative project aims to exchange the current situation and development of the mushroom industry between China and the Netherlands, to train Chinese mushroom entrepreneurs, and to seek collaboration between the two countries. In September 2004, an eight-person delegation headed by the Executive Deputy Director of the Association, Mr. Jiao Changgen, visited the Netherlands to implement the training, field visits and other activities relating to the project "Small Mushroom, Big Business". In March 2004, researcher Mrs. Zhang Jinxia, and General Manager Mr. Zhao Bin were sent by the Association to attend "The 16<sup>th</sup> International Symposium on Mushroom Research and Cultivation" held in Miami, USA. In October 2004, Dr. Mark Wach, Chairman of International Society of Mushroom Science, visited China. Mr. Gu Erxiong, Director of the Association met Dr. Wach in Beijing, and had talks regarding the international exchange and cooperation in mushroom industry between China and foreign organizations.

## 3 Summary

Looking back into the past, and looking ahead towards the future, the development of the Chinese mushroom industry has a very promising future. The CEFA will do its best to provide good services to the mushroom industry and its members, just as it has done previously. The Association also wishes to strengthen the exchange and cooperation with friends within the world mushroom fraternity based on mutual benefits. We will share research results and information resources with each other, in order to realize common progress, development and prosperity. Finally, we wish the mushroom industry, which contributes so much to the health of humankind, a vigorous advance.