

# An Industrial Economics Perspective on the Economic Valuation of *Cornus officinalis*: A Case Study from Xixia County, Henan Province

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## Abstract:

The dual nature of *Cornus officinalis* as both a medicinal and edible resource endows it with expansive market potential. This research develops an analytical framework to evaluate the economic value of *Cornus officinalis* through the lens of industrial economics. Utilizing theoretical exploration and a case study centered on Xixia County, Henan Province, the study draws several key conclusions: First, within the primary industry, *Cornus officinalis* contributes to the enhancement of farmers' incomes and fosters the growth of local agriculture-related sectors through the cultivation of traditional Chinese medicinal herbs. Second, from the perspective of the secondary industry, *Cornus officinalis* generates substantial economic worth via food processing and pharmaceutical commerce. Finally, in the realm of the tertiary industry, the economic value of *Cornus officinalis* is predominantly realized through leisure and wellness services, as well as the tourism sector.

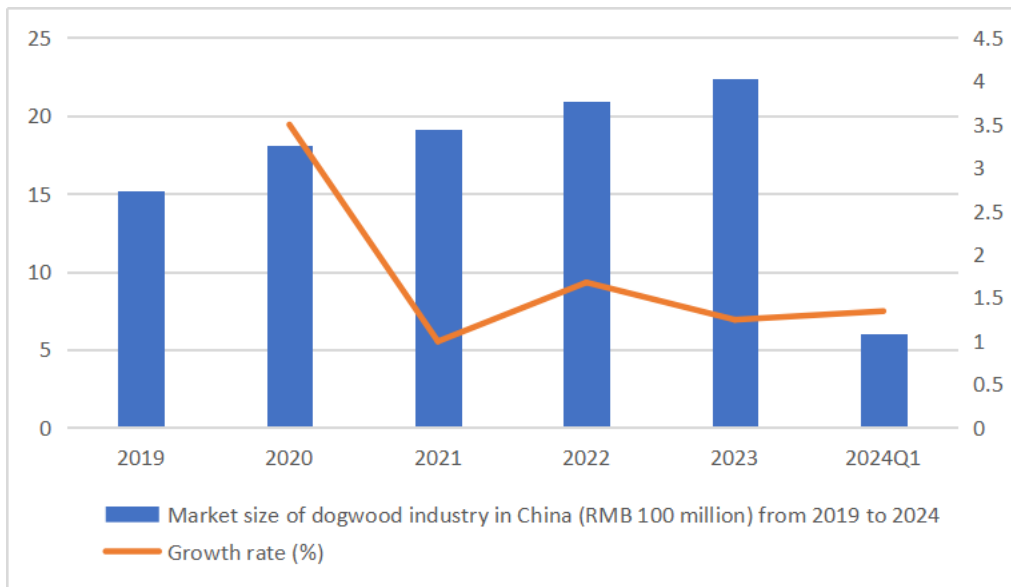
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## 1. Introduction:

*Cornus officinalis*, a member of the Cornaceae family and *Cornus* genus, is commonly referred to as dogwood, Chinese cornelian cherry, or Japanese cornelian cherry. This deciduous shrub or small tree typically reaches a height of 4 to 10 meters, characterized by its gray-brown bark and slender, cylindrical branches. It sports terminal or axillary winter buds that are oval to lanceolate in shape. *Cornus officinalis* flourishes in warm and humid climates but is sensitive to extreme cold, with an ideal growth temperature range between 20°C and 25°C. The plant boasts a lengthy lifespan and undergoes four distinct stages of growth: juvenile, initial fruiting, peak fruiting, and senescence. This medicinal plant typically starts to bloom and bear fruit around the age of six, reaching its peak fruiting period around the age of 20. It's commonly found across various provinces in China, as well as in North Korea and Japan.

In the sphere of traditional Chinese culinary culture, medicinal herbs are often integrated into cooking practices. The revised "Food Safety Law Implementation Regulations" of 2019 stipulate that the health administration department of the State Council, in conjunction with the food safety supervision and management department, must

promptly update the catalog of substances recognized as both food and traditional Chinese medicine materials. To comply with these legal requirements, on November 10, 2021, the National Health Commission, in partnership with the State Administration for Market Regulation, issued the "Regulations on the Management of the Catalog of Substances Traditionally Both Food and Chinese Medicinal Materials." Then, on November 9, 2023, the National Health Commission and the State Administration for Market Regulation jointly released the "Announcement on the Addition of 9 New Substances Traditionally Both Food and Chinese Medicinal Materials," which, for the first time, included *Cornus officinalis* in this catalog. This recognition has significantly bolstered the growth of the *Cornus officinalis* industry. On one level, this categorization signifies the legal acknowledgment of *Cornus officinalis* as a dual-purpose substance for both food and medicine, allowing its use in commercial food products. On another level, its inclusion in the catalog verifies the safety of *Cornus officinalis*, with the catalog's dynamic management and real-time monitoring of substance safety risks providing a strong safety net for *Cornus officinalis* food products. This groundwork sets the stage for the plant's continued and secure presence in the market.



**Figure 1: Market Size of the Chinese Cornus officinalis Industry from 2019 to 2024**

The “China Cornus officinalis Industry Investment Strategy Analysis and Market Size Forecast Report,” published by China Smart Research Prospect, reveals that the market value of China’s Cornus officinalis industry soared to 273 million yuan in 2019 and further expanded to 402 million yuan by 2023. From 2019 to 2023, the industry’s market size maintained a steady upward trend with a sense of stability, posting growth rates of 19.41% in 2020, followed by 5.52%, 9.3%, 6.91%, and 7.46% respectively. It’s worth noting that the growth rate in 2020 exceeded the average of 9.72%, a spike largely due to the pivotal role of Cornus officinalis during the acute phase of the COVID-19 pandemic. Chinese pharmaceutical firms ramped up the development of traditional Chinese medicine formulas to fight the virus and enhance public immune strength. Cornus officinalis played a crucial part in this, especially in the demand for raw materials with heat-clearing and detoxifying properties in formulas like Pneumonia No. 1, No. 2, No. 3, and No. 4. Moreover, Cornus officinalis, ginseng, black shun tablets, combined suhexiang pills or Angong Niu Huang pills are also irreplaceable specialists, which also drive the demand of dogwood varieties in the prescription.

To sum up, Cornus officinalis was officially incorporated into the National Health Commission in November 2023 as both a food and Chinese medicine, which affirmed the food safety of Cornus officinalis and laid a foundation for the development of various values of Cornus officinalis. At the same time, the statistical data also confirmed that the market size of the Cornus officinalis industry is steadily improving, indicating the development prospects of the industry. This study attempts to construct a theoretical analysis framework from the perspective of industrial eco-

nomics, aiming to reveal the market value and explore the importance of Cornus officinalis to economic and social development.

## 2. Theoretical Analysis

### 2.1 Connotation of Economic Value

The economic value refers to a quantifiable measure that satisfies the demand for exchange value. Its core is economic benefits, encompassing profit acquisition and distribution, property rights and appreciation, material production, and demand within a complete chain of economic interests (Feng Xiaoxi, Gao Shujie, 2017). Traditional Chinese medicine (TCM) has economic values, with a quantitative value that provides solutions to the problem of health among the people; promotes public health as well contributes to both socio-economic development and Economic growth (Ge Yanfei, Shen Junlong, Li Jie, et al., 2020). Cornus officinalis is a Medicinal and Edible Plant with ornamental traits. Thus, its economic value should not be confined to the quantifiable value that meets health demands but should be assessed based on its varied applications. Specifically, the economic value of Cornus officinalis includes exchange value, health value, edible value, and social value, and this value should be quantified according to the different market demands for it.

### 2.2 Economic Value of Cornus officinalis from an Industrial Perspective

This study builds a theoretical model from the perspective of industrial economics to explain the economic value of Cornus officinalis in the primary, secondary, and tertiary sectors.

The primary sector refers to industries that directly use natural resources for production. In this case, the economic value of *Cornus officinalis* is most obvious in its role in the cultivation of traditional Chinese medicinal plants. The main revenue comes from the economic profits generated by cultivation and related businesses. This value encompasses three main aspects: Firstly, it advances the Chinese medicinal materials industry and increases farmers' incomes; secondly, it generates seasonal employment opportunities, as activities like grafting, harvesting, and pest control require skilled labor or a significant workforce; and thirdly, it stimulates the growth of related industries such as seed production, land management, and agricultural machinery.

In the secondary sector, the economic value of *Cornus officinalis* is derived from the processing and sale of pharmaceuticals and food products. The secondary industry transforms the primary products supplied by the primary industry. *Cornus officinalis* in this sector is involved in deep processing and the pharmaceutical and food segments. In addition to the collection and enjoyment of *Cornus officinalis* itself, most people can understand that this “old wife’s mother” is so economically valuable: first every household catering in the food industry — fresh and sweet juice, mellow jam, delicate wine; then almost everyone traditional Chinese medicine enterprise minerals in natural health care measures-instant pills, tablets or fine grains. As for the tertiary sector, *Cornus officinalis* supports economic activities concerning a useful life form and works well in promoting tourism. The tertiary sector or the service industry is the third of all sectors of an economy and includes services that are not purely agricultural, such as food production. In this context, *Cornus officinalis* plays a role in traditional Chinese medicine (TCM) health services and cultural enhancement. With an increasing focus on healthier living, there is a growing demand for health services relating to TCM. *Cornus officinalis* is a key ingredient in Chinese medicine and it fits very well into health services like rehabilitation, wellness retreats, and eco-tourism. Moreover, its cultivation and processing can be integrated into rural tourism, offering experiences like educational tours and cultural projects. Additionally, *Cornus officinalis* can contribute to the creation of a museum dedicated to traditional Chinese medicine, which would help preserve and promote the cultural heritage of TCM.

### **3. Economic Value of the Primary Industry of *Cornus officinalis***

*Cornus officinalis*, an important part of traditional Chinese medicine, plays a pivotal role in the economic vitality of

numerous townships across China, particularly in Henan provinces. The economic benefits derived from the primary industry of *Cornus officinalis* can be categorized into several key areas:

Firstly, *Cornus officinalis* contributes to economic growth at the household and local levels by enhancing farmers' incomes and fostering the development of the planting industry. A prime example is Xingshang Village in Miping Town, Xixia County, Nanyang City, Henan Province. Miping Town boasts over 60,000 mu (approximately 10,000 hectares) of Chinese medicinal material planting bases and more than 100 stores purchasing Chinese medicinal materials. The annual market transaction volume for *Cornus officinalis* exceeds 7,000 tons, with a value surpassing one billion yuan. As a result, 85% of the town's farmers have seen their per capita income increase by more than 10,000 yuan due to the growth of the Chinese medicinal material industry.

Between 2014 and 2016, the price of *Cornus officinalis* in China experienced a decline, averaging only 19.3 yuan/kg in 2016. However, starting in 2017, the domestic average price began to rebound significantly, reaching 38.3 yuan/kg in 2018. Although prices dipped slightly in 2019, the COVID-19 pandemic has since driven up the prices of Chinese medicinal materials. In 2021, the average domestic price of *Cornus officinalis* was 37.1 yuan/kg. Since 2022, the price has risen more sharply, averaging 50 yuan/kg in 2022 and 57.5 yuan/kg in 2023. The steady price increase has led to substantial annual revenues for farmers. *Cornus officinalis* has an output of approximately 500 jin (around 250 kilograms) per mu and based on 2023 market prices, each mu of *Cornus officinalis* can generate a profit of about 14,375 yuan. The cultivation of *Cornus officinalis* has become a key industry in several regions, driving substantial economic growth. For example, Foping County has a planting area of 100,000 mu (about 6,700 hectares), producing roughly 1,000 tons annually, with a yearly output value close to 30 million yuan.

Furthermore, *Cornus officinalis* plays a significantly important role in local job creation. The first category of employment is through self-employment of farmers themselves, which not only generates jobs but also offers a way to increase household income. For example, nine villages in Xixia County have formed a sophisticated cooperative for large-scale *Cornus officinalis* cultivation. By mid-2023, the planting area has reached more than 20,000 mu (approximately 1,300 hectares), providing employing for more than 13,000 people in that area. The second category is the field management of *Cornus officinalis*, which promotes seasonal work. Certain seasonal tasks require additional labor, such as soil preparation, weeding, fertilizing, watering, thinning, and pruning. In Xixia County, labor is

commonly hired on a daily or hourly basis. The average daily wages is from 100 to 150 yuan and hourly wages are from 15 to 20 yuan.

Lastly, the cultivation of *Cornus officinalis* can lead to the expansion of associated industries, including seed production, farmland leasing, and machinery use, just to name a few. *Cornus officinalis* has strong adaptability. In addition to plain areas, dogwood can also be planted on hillsides and woodlands. This versatility offers growers more options and encourages the leasing of farmland. In Xixia County, the rate for farmland leasing is about 550 yuan per mu per year.

#### **4. Economic Value of the Secondary Industry of *Cornus officinalis***

The dual nature of *Cornus officinalis* as both a medicinal herb and an edible fruit means that its economic value in the secondary industry is mainly derived from two sectors: pharmaceuticals and food products. Based on the previously established theoretical framework, the pharmaceutical industry primarily contributes to economic benefits by addressing human health needs, while the food industry generates economic value by meeting food-related demands. This section explores the economic value of *Cornus officinalis* in the secondary industry.

In food processing, a complete industry chain has developed with *Cornus officinalis* as the main ingredient. It can create economic value at every stage from sourcing raw materials to manufacturing and sales. The Chinese market offers a great variety of *Cornus officinalis*-based products, which includes dried *Cornus officinalis* fruit, wine-infused *Cornus officinalis*, steamed *Cornus officinalis*, *Cornus officinalis* slices, and *Cornus officinalis* tea beverages. Between October 2022 and October 2023, the sales volume of products containing *Cornus officinalis* demonstrated a fluctuating but upward trend. Notably, the sales volume of *Cornus officinalis*-containing products in October 2023 increased by 102.9% compared to the same month in 2022. The industry chain of *Cornus officinalis* can be categorized into upstream, midstream, and downstream segments. The upstream encompasses the cultivation and harvesting of *Cornus officinalis*, the midstream involves preliminary processing such as cleaning, drying, and pitting, and the downstream extends to various industries, including traditional Chinese medicine, food, and horticulture. In rural areas of Henan and Shaanxi provinces, the “company + base + cooperative + farmer” model is commonly employed to develop the *Cornus officinalis* industry, creating an integrated industry chain. For instance, in Xixia County, Henan Province, there are 20 specialized cooperatives engaged in the production and sales of *Cornus officinalis*, along with 15 purchasing enterprises and individual businesses. Two standardized primary processing bases have been established in Jiaochangba Village, Changjiao Town, and Daguping Village, Yueba Town, for the pitting, drying, color sorting, and grading of fresh *Cornus officinalis* fruit. Over 90% of the farmers in the county are involved in *Cornus officinalis* production, and the income from this activity constitutes more than 30% of the average net income per capita for farmers in the county. This complete industry chain has effectively propelled the local economy.

In the realm of pharmaceutical processing, a variety of traditional Chinese medicine drugs have been developed using *Cornus officinalis* as the primary ingredient, and these products are performing well in the market. From a medicinal perspective, the ethanol extract of *Cornus officinalis* has been shown to significantly reduce food and water intake in non-insulin-dependent (NIDDM) diabetic rats, without affecting fasting blood sugar levels in these rats. However, it has been observed that post-meal blood sugar levels are significantly reduced, and post-meal plasma insulin levels are significantly increased, suggesting that this extract may have therapeutic benefits for type 2 diabetes patients. Moreover, *Cornus officinalis* exhibits anti-inflammatory, lipid-lowering, and anti-cancer properties. It is often utilized in health products, and the number of health products incorporating *Cornus officinalis* is on the rise. According to data from the Special Food Information Query Platform of the State Administration for Market Regulation, there are already 17 health products registered with *Cornus officinalis* as the primary ingredient, primarily in tablet, oral liquid, capsule, and granule forms. As a cherished traditional Chinese medicinal material in China, *Cornus officinalis* is rich in bioactive components and pharmacological effects, making it highly valuable in clinical applications.

Consequently, *Cornus officinalis* is widely utilized in the traditional Chinese medicine industry, particularly in the form of sliced traditional Chinese medicine, although its development in the realm of prepared Chinese medicine and health products remains in its infancy. With the COVID-19 pandemic highlighting the strength of traditional Chinese medicine and activating the traditional Chinese medicine market, *Cornus officinalis* has been presented with new growth opportunities. According to data, the output of the traditional Chinese medicine slice industry in China in 2022 was approximately 3.68 million tons, with a demand of about 3.6935 million tons. In terms of market structure, traditional Chinese medicine pills account for the largest share, representing 38%, followed by granular traditional Chinese medicine pills, comprising 26%.



## 5. Economic Value of the Tertiary Industry of *Cornus officinalis*

As people pursue a healthy lifestyle, *Cornus officinalis*, with its traditional Chinese medicinal properties, has outstanding value and application in the fields of traditional Chinese medicine health services. At the same time, *Cornus officinalis* can also be used as a landscape to promote the development of tertiary industries such as tourism. This paragraph will illustrate the economic value of *Cornus officinalis* from the perspective of its practical role in the tertiary industry.

The economic value of *Cornus officinalis* in the tertiary industry is mainly about leisure and healthcare services. This involves developing industry chains that focus on the plant's scenic beauty and restorative care, promoting a health-conscious lifestyle among the public. For example, Xixia County has worked on building a network of health-themed villages and health-focused homestays, which integrate leisure travel, rehabilitation, seasonal retreats, fitness, and cultural activities. These projects include the establishment of *Cornus officinalis* themed dining experiences, ecological sightseeing routes, and recuperation centers. The health service model centered on *Cornus officinalis* increased the diversity of forms and content of the tertiary industry.

*Cornus officinalis* also contributes to the tertiary industry as a landscape plant. *Cornus officinalis* blooms earlier, generally in January to March, and matures from August to October, and it serves as a good tourism resource during spring and autumn. The value of *Cornus officinalis* as a landscape plant has two sides. For one thing, it enhances the aesthetic composition of natural and cultural landscapes and alters their temporal and spatial dimensions. For example, Xixia County has cultivated such plants over 13,300 hectares, creating an eco-tourism area with *Cornus officinalis* as its main scene. For another, the plant enhances garden aesthetics with its colorful blossoms and fruits, while also improving the environment by absorbing pollutants and reducing noise. It also has ecological benefits like soil and water conservation, soil structure improvement, and significant contributions to environment protection.

## 6. Conclusions and Suggestions

### 6.1 Research Conclusions

This study, based on the theoretical framework of industrial economics, examines the economic value of *Cornus officinalis*. Based on the empirical analysis of the case in Xixia County, Henan Province, the following three conclusions are obtained:

Firstly, the cultivation of *Cornus officinalis* as a Chinese medicinal material has significantly promoted farmers' incomes and also fuels the growth of local agriculture-related industries. The development of *Cornus officinalis* in the primary industry is based on the cultivation of Chinese medicinal materials, which enables farmers to increase income through the sale of raw materials. The crop's characteristics and the need for field management generate seasonal employment opportunities for the locals. Additionally, the plant encourages the development of the related agricultural industries.

Secondly, in secondary industry, *Cornus officinalis* generates huge economic value through food processing and medicine sales. Based on its dual nature as a medicinal and edible, *Cornus officinalis* has established a comprehensive industry chain through initial and advanced processing, as well as the sale of raw materials, which benefits farmers, enterprises, and the local economy. Furthermore, as a medicinal material, *Cornus officinalis* can be used to develop mass-market medical products and generate economic value through value-added services.

Lastly, the economic value of *Cornus officinalis* in the tertiary industry is mainly reflected in the leisure and healthcare services and the tourism industry. *Cornus officinalis* plays an important role in the health service industry chain, focusing on themes of rehabilitation and leisure vacation. Moreover, the plant's landscape value, through beautification and ecological purification, has led to the creation of eco-tourism areas and the development of the tourism industry.

### 6.2 Suggestions

From the perspective of product development, it is recommended to expedite the research and development of *Cornus officinalis* food and medical products. Integrating the concept of functional food snacks into product development strategies can attract the younger generation, expanding market opportunities and sales channels. In terms of income distribution, the economic profits generated in the secondary and tertiary industries are significantly higher than those in the primary industry. Consequently, the government should establish appropriate pricing and distribution systems, guide the market to promote farmers' income, and eliminate excessive income disparities.

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