

Visual Analysis of Agricultural Production Trusteeship Research in China Based on NoteExpress, FineBI and VOS Viewer

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Abstract: Under the guidance of the rural revitalization strategy, Theoretical research and practice on China's rural agricultural production trusteeship is in full swing. In this paper, China Knowledge Network (CNKI) database was selected as the data source and used to collect as well as screen domestic literature using NoteExpress, and obtain 442 documents highly consistent with this study. The research trend of the issue is further predicted by statistical analysis of publications. At the same time, the NoteExpress decomposed the literature title, and found that the specific regions is key elements. The point map function in the basic chart analysis of FineBI was used to draw distribution map of the specific regions on the China map. So, the implementation situation and conditions of agricultural production hosting in China were known. This study also uses VOS viewer to analyze the co-authorship of literature authors and co-occurrence of literature keywords, and sort out the mainstream views of core research scholars and current research hotspots. With the help of the above computer software, the overall research review of Chinese scholars on agricultural production trusteeship has a clear context.

Keywords: agricultural production trusteeship; land trusteeship; visualization

1. INTRODUCTION

Agricultural production trusteeship is a kind of agricultural operation mode in which the farmers with the land management right voluntarily outsource part or all links of the agricultural production to the corresponding agricultural socialized service organization under the premise of maintaining the land ownership, contract right, management right and income right unchanged. In 2014, the trusteeship service model was proposed for the first time and carried out the expansion of the pilot work. Since then, the agricultural production trusteeship mode has made bold attempts all over the country. By the end of 2018, China's agricultural production trusteeship area was 364 million mu.

2. DATA EXTRACTION AND ANALYSIS

2.1 Extraction of the Data Sources

With the large promotion of agricultural production and trusteeship business models all over the country, scholars have paid more and more attention to this problem. This study took literature data from China Knowledge Network and "land trusteeship" and "agricultural production trusteeship", and more than 1,000 Chinese documents were retrieved. The retrieved documents were manually screened with the help of NoteExpress, excluding meetings, reports, cases, investigations and other literature unrelated to this study, the remaining 442 documents.

2.2 Temporal Analysis of the Data Sources

This study counted the time distribution of the data sources using the year statistical function of the NoteExpress, yielding that the time distribution of the studied literature was 2004 - 2020, as shown in Figure 1.

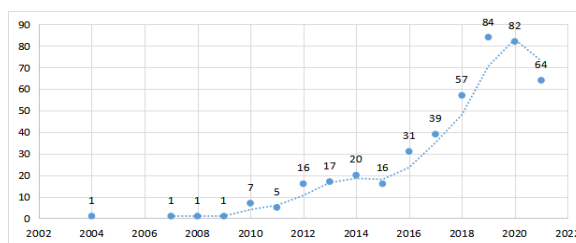


Figure 1. The trend of literature on land trusteeship published for years

From the perspective of the change trend of the number of documents, since the beginning of 2004, some scholars have discussed the agricultural scale operation in China, and proposed the way of land trusteeship to change the low efficiency of China's agricultural production and achieve moderate scale operation^[1]. After that, before the national policy was clearly put forward in 2014, some forward-looking scholars on this issue gradually began to rise. After 2016, after the state issued many relevant policies to guide the development of agricultural trusteeship mode, scholars' research on agricultural production trusteeship also showed a sharp rise. Agricultural production trusteeship is an emerging product in the process of realizing China's agriculture in China. It is still in the exploration stage. During the 14th Five-Year Plan period, it will still be the top priority in China's rural revitalization strategy. Therefore, research on this problem will continue to maintain a steady growth trend.

3. VISUAL ANALYSIS OF AGRICULTURA PRODUCTION TRUSTEESHIP

3.1 Visual Analysis of Regional Distribution in Agricultural Production Trusteeship Research

This study decomposed the titles of 442 documents in the "title (participle)" in the NoteExpress and found that many scholars' research on land hosting focused on 232 specific

areas from 25 provinces. These documents account for a relatively high proportion, with about 50%, indicating that agricultural production trusteeship is carried out as popular throughout the country. The modes, methods and effects carried out in various regions are different, which has also become the object of high attention of scholars.

This study also summarized these regions in a visual region map using FineBI5.1, as shown in Figure 2. At present, the research literature on Shandong, Hebei, Henan, Anhui and Hunan, located in the hinterland of central China, these areas or large agricultural provinces, agricultural policy implementation is faster; or in economically developed areas, farmers have little land, migrant work, high non-agricultural income, farmers themselves have a strong desire to land transfer or custody. At the same time, the local rural economy of scale foundation is good, which has laid a good foundation for the implementation of agricultural production trusteeship.

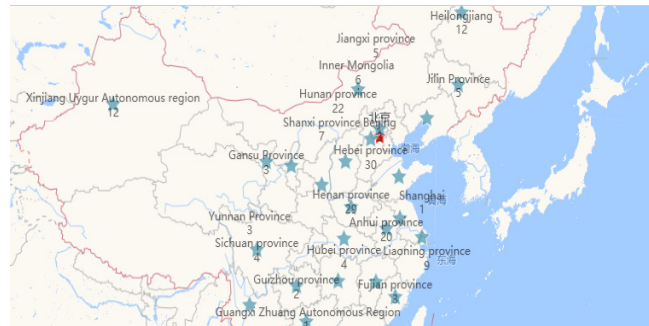


Figure 2. Regions involved in the land custody research literature

3.2 Visual Analysis of Cooperative Network

This research using VOS viewer, the cooperative analysis was carried out on the 442 documents between the authors. According to the statistical results and the content of literature, the most influential authors on the research of agricultural production trusteeship are Wu Shunchen, Kong Xiangzhi, Du Hongyan and Chen Junhong respectively. From the map shown in Figure 3, we can see that in the field of agricultural production hosting, several cooperative sub-networks with the above authors as the core are formed. There are strong academic links among scholars within the sub-network, but the cooperation relationship outside the sub-network is not strong.

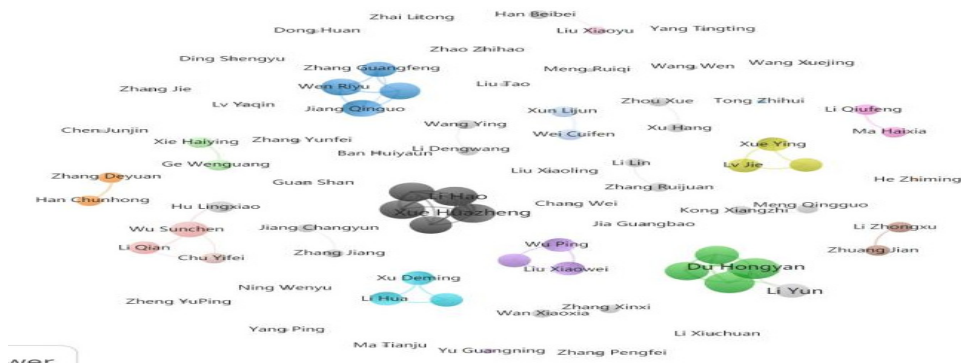


Figure 3. Research map of the field of agricultural production trusteeship

By combing through the relevant literature of these core scholars, we can have a good grasp of the current frontier mainstream views on agricultural production trusteeship. Wu Shunchen (2019) and his collaborators discussed the advantages and application of land transfer and land trusteeship, but there are no advantages and disadvantages, which can be selected according to local conditions^[2]. By comparing the difference between land transfer and land trusteeship after the subdivision of management rights, land trusteeship is defined as a service-based income sharing and risk sharing mechanism formed between farmers and trusteeship service subjects^[3]. They also based on the perspective of policy implementation examined the effectiveness of agricultural production custody project, think policy executor under the drive of benefit maximization, through policy flexibility, realize policy smooth landing but policy flexibility caused a series of problems, need to design at the top level and grassroots level to build information feedback mechanism, constantly improve the relevant policies^[4]. They also made in-depth research on many factors influencing small farmers as the choice of trusteeship, such as risk aversion preference, age, employment, love ground complex, cognition, and difficulty in supervision^[5].

Kong Xiangzhi is more from the perspective of new agricultural business entities, and supply as well as marketing cooperatives, cooperatives, agricultural enterprises and cooperatives all have their own characteristics and advantages and disadvantages^[6]. These operators are also the most common keywords for scholars studying agricultural production trusteeship. As shown in Figure 4. Kong Xiangzhi and his co-researchers are more unique in the research of cooperatives and supply and marketing cooperatives. They believe that cooperatives are the most effective way for farmers to organize them. Through the market information, technology, training and management concepts introduced by cooperatives, the operation and management level of small farmers can be promoted to promote their transformation into new professional farmers. In addition, since the development of the cooperative, the business has entered the stage of land trusteeship and agricultural tillage service as the supplement, and has become an important carrier of socialized agricultural services through land trusteeship^[7]. Kong Xiangzhi, Meng Qingguo and Dong Xuan deeply discussed the supply and marketing cooperatives. They thought that the mixed organization with the nature of both government and non-public organizations have its rationality. In addition, the universal output of supply and marketing cooperatives can promote the development of farmers' economic cooperative organizations, but also make the supply and marketing cooperatives superior to other trusteeship

organizations in the process of realizing agricultural production trusteeship^[8].

Du Hongyan and Chen Junhong and others believe that "big countries and small farmers" is China's basic national conditions that cannot be changed in the coming period of time. Agricultural production trusteeship is the correct path to lead small farmers to the road of agricultural production modernization based on China's national conditions^[9]. Du Hongyan and his collaborators made specific distinctions between agricultural production trusteeship, land trusteeship, agricultural socialization services and agricultural production services, and defined land trusteeship as one of the forms of agricultural production trusteeship, only referring to the whole process of agricultural production trusteeship. They made an innovative analysis of the logical relationship between agricultural production trusteeship and the modernization of small-scale agricultural production^[10]. Du Hongyan and others contrasted and analyzed the different types of production trusteeship organizations established with farmers and service subjects as the core, and specifically summarized the characteristics of these organizations in technology promotion mechanism, interest distribution mechanism, risk prevention mechanism and other aspects^[11]. And from the interest distribution mechanism, general market and share cooperation. The general market-based interest linkage mechanism has universal applicability, but it lacks the establishment of the mechanism of sustained income of farmers, and the share cooperative type is more suitable for the village collective led agricultural production custody organization, but for farmers, the benefits of continuous income gain with the identity of operating capital^[12].

3.3 Visual Analysis of Agricultural Production Hosting Research

In this study, a co-occurrence analysis of keywords was collected in 442 literature articles using VOS viewer. A total of 1143 keywords extracted in these literatures, when the frequency of keywords is set to greater than or equal to 5, the final extracted keywords are 7 clusters centered on agricultural production trusteeship, land trusteeship, supply and marketing cooperatives, trusteeship services, professional cooperatives, agricultural socialization services, and modern agriculture. Among them, land trusteeship, socialized agricultural service, modern agriculture and trusteeship services have the highest common strength, which is the most popular research hot spot at present. This is shown in Figure 4. Combined with these hot research words, the relevant hot content is sorted out to find out the core content of the research on agricultural production trusteeship.

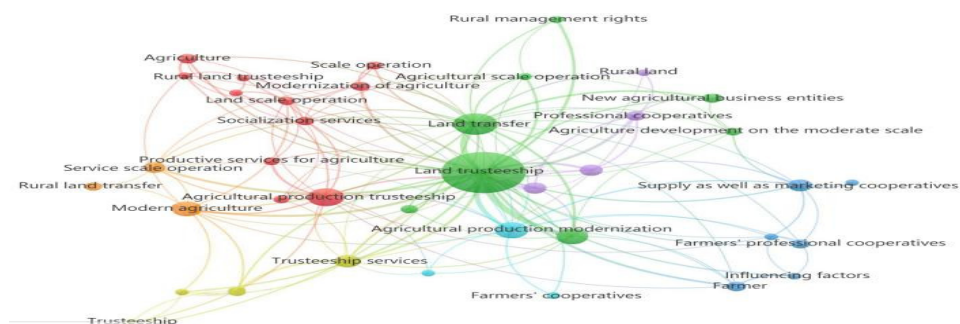


Figure 4. Visual map of keywords on agricultural production trusteeship

3.3.1 industry production hosting is a complex system engineering

In the field of agricultural production, scholars prefer to use the term land trusteeship instead of agricultural production trusteeship. Land trusteeship was most associated with other keywords, with the total association strength of 91. Along with the other 31 keywords. Land trusteeship is a new thing that develops on the basis of service scale operation, overcome business risks, reduce costs and improve income on the basis of land circulation. Both can either coexist simultaneously or convert alternately. In the process of land trusteeship, business entities and small farmers need to establish a cooperative contract relationship through various intermediary agencies. These intermediary agencies may be professional cooperatives established in place, or supply and marketing cooperatives, village, township and town governments, coordinating funds, policies, supervision and conflicts; they may also be agricultural enterprises, which provide socialized services indirectly through entrusted agents. Through these intermediary agencies, small farmers have realized organization, and through the market exchange mechanism, reached trusteeship service intention and contract with emerging agricultural business entities, realizing land scale operation, improved agricultural production efficiency, and participated in the process of modern agricultural development.

3.3.2 agricultural production trusteeship reflects the socialized agricultural services

Agricultural scale operation needs supported by a sound socialized service system. Agricultural socialization service is the process of farmers buying agricultural services through the market. Agricultural production trusteeship is a special agricultural service product, which is an innovative form of agricultural socialization service. After farmers choose trusteeship for agricultural production, they can rely on agricultural service outsourcing to complete the agricultural production process on the basis of without changing the land contract right. The purchase of agricultural materials, field plant protection, agricultural machinery operation, technology adoption and product storage and sales in land management rights will be entrusted to the trusteeship service subject through contract. In the process of trusteeship, small farmers, as consumers, can freely choose to buy all or part of the trusteeship services according to their own consumer needs. Usually, the socialized service needs of different small farmers are differentiated by age, education background, income level, income source, land ownership scale and other factors. In order to enhance their service capacity and increase efficiency, the subjects of agricultural production trusteeship will adopt horizontal, vertical or mixed combination to gather more high-end elements into rural areas. With the process of agricultural modernization, agricultural socialization service still has a large space for development.

3.3.3 agricultural production trusteeship is a new path to realize the connection between small farmers and agricultural modernization

The process of agricultural modernization is the transition from scattered small-scale peasant economy to scale operation^[13]. Different countries in the world have different agricultural resource endowments and different paths for agricultural modernization. Based on the national conditions of land fragmentation brought about by "big countries and small farmers" and family contracting, China has been actively exploring the path of land integration, suitable for scale operation, and finally realizing the goal of connecting small farmers with modern agriculture. There are two ways of agricultural scale operation, land scale operation or service

scale operation. Modern agriculture is a complex agricultural system with clear division of labor, highly specialization and commercialization^[14]. Different types of small farmers can choose to participate in the development and construction of modern agriculture in various ways, such as independent cooperation, cooperation with capital, and become the beneficiaries of modern agriculture. At the present stage, agricultural production trusteeship is suitable for China's national conditions, break through the bottleneck of too many small farmers, insufficient and scattered land, fully guarantee the "three rights" (land contract right, homestead use right and collective income distribution right), guarantee that small farmers voluntarily participate in modern agriculture, and share the income rights brought by modern agriculture. The mode of "income sharing, risk sharing" makes the interest connection between new agricultural business entities closer. For agricultural production investment, the integration of land, capital, labor and other elements of different owners is more optimized to realize the balanced guarantee of the interests of all parties and maintain the sustainable development of modern agriculture.

4. CONCLUSION

The article uses NoteExpress, FineBI and VOS viewer software, the visual analysis of agricultural production hosting research in China for nearly 20 years, with the agricultural production hosting practice boom, the research on the problem will continue to grow steadily, and the empirical research within the region. Mainstream scholars have great differences in their research perspectives on this issue, including the effect of policy and policy implementation, influencing factors, characteristics of trusteeship organization, interest connection mechanism, etc. From the key word analysis of the research results of scholars in this field, the core content of the research is focused on agricultural production trusteeship is a multi-subject, multi-business, multi-objective and multi-objective system project. It is a socialized agricultural outsourcing service, with trusteeship service as the core, promoting the goal of small farmers to hand in hand to modern large agriculture.

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REFERENCES

- [1] FAN Aijun, XIAO Dandan. Moderate scale operation: China's agricultural modernization must break through the "bottleneck". Study forum, Vol. 09, pp. 52 - 56, 2004
- [2] Wu Shunchen, Cao Danqiu, Li Qing. The choice of Land Transfer and Land Trusteeship: The difference between Good and Bad or Conditional Difference? Journal of Jiangsu University, Vol.21, pp. 59-76, July, 2019
- [3] Hu lingxiao, Wu Shunchen. Connotation and Realization of Land Trusteeship: Conceptual Analysis and Case Study. Economist, Vol. 35, PP. 30-35, Jan. 2021
- [4] WU Shunchen, LU Xuejiao, HUANG Shuaijin. How Can Agricultural Production Trusteeship

- Projects Be Effective? A Review from the Perspective of Policy Implementation. *China Rural Survey*, pp. 100 - 127, May 2021
- [5] WU Shunchen, QIAN Yuhao, YU Hailong. Farmers Participation Model and Stability of Agricultural Scale Management: Based on the Comparison of Land-Scale Management and Service-Scale Management. *Economy and Management*, Vol. 35, pp. 30-35, Jan. 2021
- [6] Lu Yangxiao, KONG Xiangzhi. Agricultural production trusteeship formation mechanism and service mode analysis of modern. *Modern Economic Research*, pp. 119-125+132, Jun. 2021
- [7] MU Nana, KONG Xiangzhi. Evolution Logic of Agricultural Socialized Services of Cooperatives: A Case Study on renfa Cooperative. *Finance and Trade Research*, vol.30, pp. 64 - 75, Aug. 2019
- [8] Meng Qingguo, Dong Xuan and Kong Xiangzhi. Why do Embedded Organizations Exist? A Case Study of Agricultural Outsourcing by the Supply and Marketing Cooperatives, *Management World*, vol. pp. 165 - 184, Feb. 2021
- [9] DU Hongyan, CHEN Junhong. With agricultural production trusteeship to solve the "big country small farmers" problem, *The CPPCC Daily*, 2021 - 6 - 24
- [10] DU Hongyan, CHEN Junhong, LIU Baoyin, GONG Jing. The Logic Innovation of Agricultural Production Trusteeship to promote Smallholder's Production Modernization. *Chinese Journal of Agricultural Resources and Regional Planning*, Jun. 2021
- [11] DU Hongyan, CHEN Junhong. Research on the Organization Methods of Agricultural Production Hosting. *Agricultural Economy*, pp. 12 - 14, Jan. 2021
- [12] DU Hongyan, CHEN Junhong, Li Yun. Agricultural Production Trusteeship Organization Mode and Interest Connection Mechanism to Promote the Organic Connection of Small Farmers and Modern Agriculture [J]. *Rural Economy*, vol. 01, pp. 31 - 38, 2021
- [13] ZHANG Shiyun, JIANG Jiyu, LUAN Jingdong. The Analysis and Inspiration of Scale Operation in Agricultural Process of United. *Issues in Agricultural Economy*, vol.35, pp. 101 - 109 + 112, Jan. 2014
- [14] LU Yangxiao, KONG Xiangzhi. Exploration of Organic Connection between Small Farmers and Modern Agricultural Development since Reform and Opening-Up, *Reform of Economic System*, pp. 90 - 95, Jun. 202