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Study on Connotations and Development Strategies of Creative Agriculture

Liangshan YANG^{1*}, Hailing HE²

1. Institute of Rural Development, Zhejiang Academy of Agricultural Sciences, Hangzhou 310021, China; 2. Institute of Plant Protection and Microbiology, Agricultural Resources Planning Office of Zhejiang Province, Hangzhou 310021, China

Abstract Creative agriculture is a new agricultural type with originality as a key element, integrating agricultural production activities into creative activities such as culture and art, broadening functions of agriculture and improving added value of agricultural products. Creative agriculture is characterized by external economy, technology integration, art appreciation, high efficiency and value, and it is significant for promoting inheritance of traditional culture, optimal allocation and regeneration of resources, optimal distribution of elements, expansion of agricultural functions, construction of beautiful countryside, cultural construction of rural areas, transformation of agricultural and rural economic growth mode. With agricultural resources as the foundation, sightseeing and leisure agriculture as the breakthrough point, by means of science and technology, many regions in China have explored products of creative agriculture and presented several typical cases of creative agriculture. However, these projects are mostly restricted by problems such as poor development concept, lack of supportive policies, and ineffective industrial integration. Taking Zhejiang Province as an example, we proposed path choice, supportive system and relevant policy suggestions for the development of creative agriculture.

Key words Creative agriculture, Restriction, Path choice

1 Connotations and characteristics of creative agriculture

With originality as a key element, creative agriculture expands functions of agriculture by integrating agricultural production with creative cultural and artistic activities. As a new agricultural type with higher added value, it is a kind of creative industry full of creativity, imagination and artistic appeal, and characterized by common properties of creative industry and unique properties of agricultural industry.

1.1 External economy The value of creativity lies not in its scarcity, but its popularity, and higher popularity means higher value, thus creative agriculture is endowed with positive externality. Production cost of creative agriculture products depends largely on cost of offering creativity, rather than on number of consumers, while producers enjoys increasing returns to scale in the production. Increasing consumers of creative agricultural products will bring not deadweight cost of congestion, but revenue sharing, and their consumption will create increasing returns. Once the creativity is proposed, imitation cost is much lower than the cost of originality presenter, and such spillover of originality helps develop advantages of followers.

1.2 Technology integration Creative agriculture is a synthetic product of various technologies such as modern biotechnology, industrial technology, agricultural technology, intelligent information technology, and economy, culture, habits and customs. Products and activities of creative agriculture are physical forms of new

concepts, new technologies and new contents, showing the interpenetration, radiation and integration of multiple domains, multiple knowledge, multiple disciplines, multiple cultures, multiple technologies and multiple concepts, thus they are characterized by outstanding technology integration, industrial integration and penetration.

1.3 Art appreciation Creative agriculture, a physical manifestation of originality in agriculture, with culture and originality as the core contents, knowledge and technology as the means, produces new value. It is an intellectualized, characteristic, individualized and artistic product of culture and technology, and value of creative products lies in not only in the products, but also in added value of these products. New concepts, technologies and other creative contents are gradually produced with originality, agricultural products and agricultural production process are endowed with cultural connotations via language, character and art, with which "psychogenic" preferences of producers and consumers will be satisfied because of the great spiritual enjoyment.

1.4 High efficiency and value In the production of agricultural products, creative elements are introduced to produce creative agricultural products, which can best meet the high-grade and sensual needs of various consumer groups and also their needs for novelty, and maximize their spiritual utility. Creative agriculture improves comprehensive benefits of agriculture, increases farmers' income directly, provides more job opportunities for farmers, realizes income increasing in many sections; improves performance, productivity and resource utilization efficiency of agricultural products, provides people intellectualized, characteristic and artistic creative agricultural products and services, whose added value in science and technology and cultural knowledge is much higher than those of common agricultural products and services. Products

of creative agriculture have to meet needs of consumers directly, thus they have not only characters of agricultural products as a kind of basic subsistence, but also properties for satisfying spiritual and cultural needs of the public. In this way, industrial chain of agricultural products is expanded, and value chain of agricultural products is promoted.

2 Significance of creative agriculture

Creative agriculture is a happy development mode that brings both spiritual and material enjoyment to voluntary participants of the extensive agricultural activities, it is a product generated in their self-fulfillment and pursuit for higher-grade life experience and value. Development of creative agriculture is also significant for promoting inheritance of traditional cultures and regeneration of resources, improving efficiency of agriculture and farmers' income, enhancing the construction of beautiful countryside and rural cultural construction, putting forward rural tourism development, transforming development mode of agriculture and rural economy.

2.1 Promoting inheritance of traditional cultures Agricultural civilization is the first basis of human production and living, out of which agricultural culture develops as the lifeblood of human beings. Chinese agricultural culture has a long history and profound connotations, and it is a kind of concept, value, moral norm and mode of thinking, a significant part of traditional culture and also a development root of Chinese culture. UNESCO's experiments in China such as Qingtian Rice – Fish System in Zhejiang Province, and Hani Rice Terrace in Honghe Prefecture of Yunnan Province highlight special value of agricultural cultural heritage. Cultural inheritance of creative agriculture is well demonstrated in Guan Zhong's (politician and militarist in the Spring and Autumn Period) "painting the eggs and then boiling them", modern painted eggs, and egg carving. It is the obligation and eternal mission of creative agriculture to inherit and bring forth new ideas to traditional cultures, development of creative agriculture helps inherit traditional agricultural cultures, facilitates the formation of unique national cultural personality such as culture type, social consciousness and aesthetic concept, and further guides and influences national economic development and social trend.

2.2 Promoting regeneration of resources Byproducts of agricultural production and consumption will be better utilized with creative ideas. In particular, high integration of agriculture and culture creates higher economic value, new agricultural resources, cultural resources and value. Walnut shells in Lin'an City (Zhejiang Province) are processed to carbon carvings, water bamboo leaves in Jinyun County (Zhejiang Province) designed as art works for export, and these cases demonstrate that creative agriculture is an important means of realizing optimization and regeneration of resources.

2.3 Enhancing optimal distribution of elements Creative agriculture focuses on exploration and utilization of intangible cultural resources such as folk customs, history and culture, especially human intellectual resources, and transforms them into new

production elements. These new elements join the production and operation like "catalyzers", then "chemical reaction" occurs between the "catalyzers" and other production elements, which improves efficiency of element distribution. Practices such as Rice – Fish System in Qingtian County, pearl in Zhuji City, and freshwater shrimp in Deqing County show that creative agriculture brings superior consciousness to agriculture and rural industrial structure, and it maintains the inexhaustible vitality by targeting at the changing structure of market demands.

2.4 Expanding functions of agriculture Creative agriculture guides agricultural production and management subjects to apply new materials and technologies, to develop fine and further processing of agricultural products, modern logistics industry and agricultural service industry, so agricultural industries will work in cooperation with a due division of labor, a panoramic industrial chain of agriculture will be constructed, and the overall competitiveness will be improved. Successful cases such as Zhejiang Xianju Cole Flower Festival and Anji Bamboo Sea demonstrate that creative agriculture explores and expands functions of agriculture, promotes the production of competitive products, development of sightseeing agriculture, agricultural processing and logistics, bioinformation, and other newly-emerging industries.

2.5 Promoting the construction of beautiful countryside By fully integrating modern industry, information technology, biotechnology and new energies, creative agriculture creates and popularizes various ecological and high-efficiency circular agriculture economy, thus these land-saving, water-saving, material-saving and energy-saving technologies can be widely applied in agricultural production, resources used reasonably, integrated utilization of rural land resources and comprehensive utilization of agricultural resources improved, and development of low-energy-consumption and low-emission ecological circular agriculture promoted. Beautiful Countryside of Anji and Harmonious Homeland of Deqing are all successful practices showing that creative agriculture, especially originality of agricultural landscapes and planning and design, will promote the greening and beauty of villages, and improve rural living environment. Moreover, development of creative agriculture facilitates the realization of beautiful countryside construction objectives, that is, beauty of scientific planning and layout, beauty of village image.

2.6 Facilitating rural cultural construction Creative agriculture introduces modern advanced cultures into the vast rural areas, contributes to the construction of public cultural facilities in rural communities, explores rural cultural resources by attracting social forces to initiate cultural entities, provides financial support or facilities directly. In this way, more rural public cultural services will be provided, and the gap between rural and urban cultural development will be narrowed. Successful construction practices such as Zhejiang East China Sea Cultural Pearl and cultural demonstration villages have shown that creative agriculture guides rural residents and people from all walks of life to display, educate and serve themselves in the rural cultural construction. By building the

platform of rural public welfare cultural activities, depending on rural festivals and folk cultural resources, and organizing agricultural and rural cultural resources favored by rural residents, rural cultural resources will be further explored, vital cultural innovation experience of the masses will be reviewed, excellent traditional cultures will be promoted, and a favorable atmosphere for inheriting and developing agricultural and rural cultures will be created in the vast rural areas.

2.7 Pushing forward rural tourism development Creative agriculture promotes the joint development of tourism industry, agriculture, forestry, animal husbandry, fishery, processing and manufacturing, and other service industries, forms new highlights of tourism economy, and contributes to economic and social development of rural areas. Through developing creative agriculture, diversified rural tourism types can be organized according to local conditions, so as to further promote the development of leisure agriculture, forestry, animal husbandry and fishery, and the joint development of rural ecotourism and leisure tourism. Successful rural tourism development cases such as Ningbo Bridge Eco-farm and Tiangong Fazenda show that agricultural culture and rural culture products and health-care products with outstanding characteristics and attractiveness will be explored by promoting rural tourism consumption and rural tourism development.

3 Restrictions on development of creative agriculture

3.1 Accelerating the renewal of thinking In recent years, creative industries have been taken into local economic development plans by many cities in China, however, creative agriculture has not been fully understood by the public, and there have been limited theoretic studies on this field. It is even misunderstood as sightseeing and leisure agriculture, or as a kind of unilateral activity of agricultural producer or department. Development prospects of creative agriculture have not been fully realized, and only a few enterprises and agencies have been engaged in creative agriculture, relevant management departments, research institutes and investment units have no idea about the way of using originality to build the agricultural development chain and improve the added value of agriculture, especially the way of using creative agriculture to improve life quality. In the planning of modern agriculture, support for the development of creative agriculture has been rarely found. Therefore, the public understanding of creative agriculture should be improved, visual field expanded, and concept updated.

3.2 Enhancing the government policy and financial support

Construction of creative platform and atmosphere, improvement of creative consciousness and products and cultivation of creative talents need long-term initial investment and tremendous capital accumulation. Although creative agriculture products have been developed in many regions, and several typical creative agriculture development modes have been formed, supportive policy for the development of creative agriculture is hardly found in the existing agriculture-related policies, let alone the financial support, as a result, creative agriculture has developed slowly. As a weak in-

dustry, creative agriculture need active guidance and policy support of government, and a comprehensive and systematic incentive system, and cooperation of all walks of life.

3.3 Enhancing the industrial integration Industrial integration and technical reference is the premise and foundation of creative agriculture. As a synthetic product of the primary, secondary and tertiary industry, creative agriculture has to borrow technological fruits of modern industry. Without sufficient communication among agriculture, industry, information, culture and art industries, the existing organization system and operation mechanism can hardly meet the overall development needs of creative agriculture.

3.4 Cultivating platform construction teams Existing creative platforms such as the small-scale "farm-stay" projects focus on original features of rural areas and provide only catering and accommodation services, but have poor hardware facilities, sci-tech contents and cultural connotations. Low-level repeated construction of creative agriculture platforms leads to the poor development of participants' creative potentials, poor originality, technical and artistic properties of creative agriculture products, and poor influence and radiation capacity of creative agriculture.

Originality is the intellectual output of human beings, creative talent is a key factor in the development of creative agriculture. When creative agriculture grows rapidly, high-end talents are needed urgently, but in fact, professional creative teams for project planning, value analysis, market orientation, design and construction, originality cultivation, investment attraction and operation are badly wanted in all regions, especially professional training organizations and teams for developing creative potentials of consumers. As a result, the latest technologies of other industries and disciplines can hardly be applied to create creative agriculture products with rich cultural connotations and high artistic quality.

4 Path choice for the development of creative agriculture

4.1 Exploring sources of creativity Creativity is the soul of creative agriculture, and it originates from diverse sources, but creativity in creative agriculture mostly originates from the intentional pursuit for solving consumers' problems or entertaining consumers. Effective measures should be taken to develop creative agriculture, for instance, making research and development plans, summarizing experience, investigating needs of consumers, paying attention to the leading users, enhancing originality searching, encouraging simulation and grafting, enhancing integrated originality, so as to broaden the sources of creativity and ensure endless creativity of agriculture.

4.2 Promoting new and high-efficiency creative agriculture

There are different development modes of creative agriculture in Europe, such as high-tech foreign exchange-earning creative agriculture in the Netherlands, social life functional creative agriculture in Germany, tourism and environment-friendly creative agri-

culture in Great Britain, environment-friendly and ecological creative agriculture in France. Creative agriculture in Beijing through decades of development has also formed many outstanding modes, such as cultural and creative agriculture mode "Purple Paradise", landscape creative agriculture mode "plant maze". Actual conditions of different regions should be respected to promote new development modes such as creative agriculture park, creative festival and exhibition, resource development and utilization, wise exploitation of resources, agricultural cultural invention, agricultural space expansion, and to realize the sustainable and stable development of creative agriculture.

4.3 Constructing the joint and mutual-promotional agricultural originality network Establishing a dynamic agricultural originality network is an effective path to the sustainable and rapid development of creative agriculture. Creative agriculture production depends on inspiration and creation of creative subjects, and its development needs a great deal of information exchange, intellectual concentration and originality excitation. With the change of social, technological and economic environment, it is impossible for individual creative subjects to obtain all resources and knowledge needed by creative agriculture. Technological subdivision, explosion of information technology, improvement of communication conditions have greatly enhanced the necessity and possibility of creative cooperation.

5 Construction of support system for the development of creative agriculture

5.1 Enhancing skill education and training, constructing the intellectual support system By utilizing key disciplines in universities, vocational education, skill training projects and quality improvement projects, professional talents with enthusiasm about rural cultures, agriculture and farmers and high artistic taste will be cultivated. To adapt education to the needs of cultivating creative agriculture talents, inheriting and innovating creative agriculture cultures, the training modes for creative agriculture talents should be further explored, and concepts, systems and teachers adaptive to the development of creative agriculture should be guaranteed. In addition, professional knowledge and skills, artistic quality, aesthetic taste and creative capacity of all engaged staff in creative agriculture should be improved.

5.2 Enhancing industrial integrated innovation, constructing the technological support system Technological support system for creative agriculture indicates the cluster of core industries, pillar industries, supporting industries and derivative industries. Modern agricultural science and technology created by dominant agricultural value belongs to core industries, and more efforts should be devoted to guarantee their rapid development. Pillar industries such as fine arts, training, agricultural finance, industrial science and technology, mass media, information industry should cooperate with creative agriculture. Supporting industries such as catering, tourism and entertainment should adapt themselves to development needs of creative agriculture, so as to provide a favor-

able service environment for creative agriculture. Moreover, fruits of creative agriculture should be applied to other industries to derive many other products and realize the positive externality of creative agriculture.

5.3 Exploring new resources, constructing the resource support system Construction of the resource support system for creative agriculture is carried out from the following three perspectives. First, the role of originality as a dominant factor in the growth of agricultural economy should be enhanced to further expand connotation and extension of creative agriculture resources. Second, comprehensive utilization of traditional agricultural cultural resources should be promoted. Specifically, by using originality to transform various natural resources, humanistic resources, tangible and intangible resources into capitals for agricultural and rural economic development, and enhance the mutual transformation of various capitals (economic, cultural and social capitals), development mode of agricultural and rural economy will be transformed on the basis of soft elements such as cultural capitals and social capitals. Third, new agricultural resources are explored by "making something from nothing", and "improving something from common things". In this way, growth of agricultural and rural economy is transformed to a "soft" driving mode.

5.4 Implementing Blue Ocean Strategy, constructing the marketing system To construct a marketing system for creative agriculture, differentiation strategies should be applied, and competitive cultural products should be popularized to enhance attractiveness and radiation capacity of creative agriculture, and win the support of audience, expand market scale and explore new consumption fields. Cultural originality should be used to push forward the brand building of agricultural products, and brands should be fully used to expand market, so creative agriculture can get rid of the price competition by relying on agricultural products with rich cultural connotations. Advertisement, exhibition and exposition, especially various experience activities can be organized to integrate creative ideas into marketing and expand the market of agricultural products.

6 Policies and suggestions for promoting the development of creative agriculture

6.1 Deepening the understanding, cultivating the creative agriculture as a strategic newly-emerging industry Creative agriculture as the in-depth integration of newly-emerging science and technology and agriculture promotes the new agricultural revolution, it represents the direction of not only agricultural science and technology innovation, but also modern agriculture development. By cultivating creative agriculture as a strategic newly-emerging industry, transformation and upgrading of agriculture will be promoted, agricultural development mode will be transformed, agricultural cultures and social civilization will be inherited and promoted.

6.2 Innovating the system, building the multiple creative agriculture agency First, relevant departments of agriculture,

industry, information and culture constitute the comprehensive coordination and organization agency for investigating resources and evaluating efficiency of creative agriculture, making development strategies and policies, providing creative agriculture more flexible development spaces, and attracting more investment.

Second, professional research organization of creative agriculture should be established under the leadership of relevant research institutes for carrying out studies on theoretic system and other aspects of creative agriculture.

Third, research and engineering center of creative agriculture should be established under the leadership of agricultural technical departments and with the support of cultural, artistic and tourism departments for applied researches and product design.

6.3 Optimizing the mechanism, creating a favorable development atmosphere First, a major promotion and propagation platform for creative agriculture should be established. On the one hand, the platform facilitates the promotion and demonstration of creative agriculture fruits; on the other hand, it popularizes knowledge about creative agriculture by fully using the advantage of modern internet resources. By enhancing the public understanding of creative agriculture, and forming a general mood of society that valuing the development of creative agriculture, a favorable development atmosphere for creative agriculture will be created.

Second, pilot demonstration zones of creative agriculture will be constructed. Modern agricultural parks with favorable foundations, strong innovative consciousness and excellent effects of originality can be selected as the pilot demonstration zones for creative agriculture to organize trade and fruit demonstration of creative agriculture, train creative talents, exchange experience of creative agriculture.

6.4 Improving policies, encouraging multilateral creative agriculture capitals Policies for promoting development of creative agriculture are improved to facilitate the construction of capital market through government guidance, policy support and market incentive. Agriculture-related financial agencies such as Rural Credit Cooperatives, small agricultural loans institutions and agricultural cooperative banks should expand their markets to support the development of creative agriculture in terms of investment and financing system. By selecting creative enterprises of a considerable scale, and attracting agricultural sci-tech enterprises to build creative agriculture investment corporations, investment and financing platforms of creative agriculture will be constructed to provide professional services for investment, financing, consultation, evaluation, planning, operation and management of middle- and small-sized creative agriculture enterprises.

6.5 Enhancing training and cultivating multi-level creative agriculture teams On the one hand, more contents and projects of creative agriculture should be added to the future farmers' training, so as to improve creative consciousness of farmers and agricultural technicians, stimulate their creative potentials. On the other hand, by cooperating with relevant creative cultural enterprises, artistic design enterprises, marketing planning agencies and

literature research departments, a batch of creative agriculture staff will be cultivated and trained.

6.6 Inheriting culture, cultivating advantageous brands of creative agriculture A batch of leading agricultural enterprises and agricultural sci-tech enterprises with strong responsibilities, good credit, high benefits, great development potentials and driving capacity should be supported and encouraged to establish public service platforms for creative agriculture by cooperating with design and art enterprises. In this way, resources of different sectors will be integrated to provide effective information, consultation, incubation, intermediary services and promotional services will be provided to support the development of creative agriculture. Brand consciousness, brand originality, brand operation and brand improvement of creative agriculture enterprise owners should be enhanced, brand creation capacity and level of enterprises should be improved. A coordinated process of originality, production, supply and marketing should be formed, and an industrial belt for new creative farms and advantageous creative agricultural industries should be built to create dominant industries of modern characteristic creative agriculture.

6.7 Establishing industrial cluster, constructing a networked cluster of creative agriculture With creative agriculture centralized area and creative agriculture park as the major carrier, industrial technologies can be integrated, agricultural industry chain expanded, industrial network set up, industrial structure optimized, advantages of all industries and enterprises in information, technology, management, fund and talent fully used. On this basis, a strategic network alliance will be formed among enterprises on different nodes of the creative agriculture network, so industrial core competence will be integrated to create greater value, optimize resource allocation and integrate industrial advantages.

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Due to the source of fertilizer is wide and it is easy for the fertilizer to pile up and rot, the cost is lower and fertilizing method is simple. Therefore, fertilizing operation can only be conducted once every year in the pear orchard, and no other fertilizers should be added. The fertilizer and herbicide are almost at no cost, and the amount of labor used for fertilizing is also reduced to the lowest point as to the pear orchard under traditional cultivation mode. The combination of natural grasses and the fertilizer factory fermenting organic fertilizers forms a great soil management method which can not only improve fertilizer efficiency, reduce pome production cost, relieve the contradiction of shortage of raw materials, but also solve the problems including the decline of soil fertility, fall of fruit quality and environment pollution due to improper application of chemical fertilizer.

(3) Irrigation. The pear orchard should be irrigated 8 to 9 times in the whole year, and the details are as follows: once a month during March to May, once every twenty days during June to August, pay attention to water control in the middle of May to facilitate the differentiation of blossom bud, conduct balanced water control after September and irrigate water used in winter during October and November^[5]. The canopies of the pear trees under standard cultivation mode are intersected, so mechanization method can not be used in the irrigation of these trees. In this condition, the available irrigation methods include furrow irrigation, irrigation by zone, winding irrigation, hole irrigation, etc., which can save the water amount by above 65% compared with the traditional flood irrigation, but some time and labors are still be wasted.

Drip irrigation is an advanced mechanized and automatic irrigation technique developed well in recent years which shows that slowly spray the water drop or fine water flow on the roots of plants. This method can save water and labor used. Tianfeng company adopts the infiltrating irrigation method, meaning that make the irrigation water wet the roots of the crops from bottom to up by

the soil capillary tube with the help of underground pipeline system, which can be also called underground irrigation. The main component of infiltrating irrigation system is underground pipeline system which can reduce the evaporation of surface water and save the water and labor needed by irrigation. With the same amount of water, the irrigating area can be increased by over one time when using infiltrating irrigation method instead of furrow irrigation.

3 Conclusions

As the development of production, the shortage of labor and the increase of labor price, more labor-saving and efficient cultivation mode will be used in the development of pome in the future. However, the production region for pome is large, it is impractical to adopt a single cultivation mode. So it is recommended to promote the wide-row and dwarf close planting mode as the main production mode, vigorously develop fruit growers' collaborative organization and mechanization operation of the fruit orchard and increase the fruit growers' income through simplifying pruning and promoting the methods of natural grasses, scientific fertilizing and water-saving irrigation.

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(From page 35)