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Research on Risks and Forecasting Countermeasures of Hainan Banana Industry

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Abstract Based on the overviews of the current conditions of Hainan banana industry, the research makes an analysis of the risks faced by Hainan banana industry. They are respectively marketing risks, natural risks, information risks and production risks. In order to promote a sustainable and rapid development of Hainan banana industry, countermeasures are proposed in the research. The first is to strengthen the leading organization of forecasting mechanisms on banana industry. The second is to establish the forecasting mechanisms on banana industry, including four aspects. They are establishing the subordinate forecasting systems on Hainan banana industry; constructing information collecting and checking mechanisms of banana industry; establishing information analysis and decision-making systems and constructing information distribution and information sharing systems. The third is to promote the construction of urgency dealing abilities of banana industry. The fourth is to further perfect the risk-defending and protecting systems of banana industry in Hainan. The fifth is to accelerate the standard generation of banana to improve marketing competence. The sixth is to accelerate the development of intermediate agents to improve the organization degrees. And the last one is to put emphasis on the tech-training courses on banana planting and production to improve the technical quality of banana industry.

Key words Banana, Risks, Forecasting, Hainan Province, China

Banana industry, the pillar industry and advantageous featured industry in Hainan, has faced and been troubled with many problems in recent years, such as marketing risks, natural disasters and pests and so on. Davey typhoon in 2005, Panama disease and banana cancer, poisonous banana in 2007 had caused a great loss to banana industry in Hainan. *Opinions of State Government on Accelerating Tropical Plants Developments in China* in 2010 definitely proposes that the main plants, such as natural rubber, cassava, oil palm, banana, litchi, mango, should be firstly supported. *Opinions of Agricultural Department on Adjusting Banana Planting Structure* in 2010 obviously put forward that the industrial information systems and forecasting mechanisms should be established and perfected. The research makes an analysis on risks and warning forecasting countermeasures of Hainan banana industry, trying to analyse the risks and the potential rules of banana industry in Hainan through scientific analysis and positively construct the industrial forecasting mechanisms. All of which play important roles on activating *Opinions* of state government, enlarging banana industry in Hainan, finding the highly efficient and sustainable way to develop banana industry in Hainan and deepening the industrial operation. At the same time, it is beneficial to promote economic prosperity of banana production areas and incomes of farmers, transferring advantages of production, region and resources of banana industry to the advantages of marketing, competition and enterprises and so on.

1 The current conditions of banana industry in Hainan

Banana is feasible everywhere in Hainan which centers along the expressway in the west-line area, such as Ledong, Dongfang, Sanya, Chengmai, Lingao, Danzhou, covering more than 90% of the total area and outputs and dominated with Brazil banana. The planting period of commercial banana in Hainan is short. However, it develops fast. The total output of banana in Hainan covers 29.3% of the total output of fruits in 2008, covering 8.2% of the total agricultural outputs^[1]. In 2009, the harvest area reaches to 45 133 hm² with total output of 1.6 million tons, worth 3.8 billion Yuan and covering 14.4% and 17.7% of the area and outputs respectively. Hainan has become the third largest province producing banana, only secondary to Guangxi and Guangdong. In order to strengthen and enlarge banana industry, governments in Hainan affirm that banana is the main agricultural plant with more policy support and guidance in recent years. Governments also formulate the long-term and mediate-term development plans, encouraging and supporting farmers to take advantages to adjust the agricultural structure and put into practice to operate standard and safe production. At the same time, in terms of capital, projects and policies, governments tend to be beneficial to Hainan, leading and absorbing social capital and commercial enterprises to join banana industry. Therefore, Hainan has formed an industrial operation method which is government guided, society involved and industrial distribution which is regionally distributed, basis produced, commercially operated. There are 40 towns and villages with more than 10 000 acres planting banana, covering 60% of the total planting areas in Hainan and flourishing a series of famous brands, such as Wanzhong enterprises, Lvchen, Jianfengling, Yaozheng, Dafengyu and so on^[2]. The

improvement of intensification of banana industry, the acceleration of industrialization promote the upgradings of techniques in terms of cultivation, selection, package, refreshment, storage and transportation. What's more, the coverage of Hainan banana in the home market are greatly highlighted. Advantages of the brand, quality, efficiency and region of Hainan banana become more and more obvious. However, there are shorts in Hainan banana industry, such as low creation abilities, inadequate technique storage, unreasonable distribution, unbalanced development, serious backward infrastructure, low management degree, weak brand awareness, inharmonious organization and weak processing industries of banana. In general, Hainan is a big province planting banana, but not a strong one.

2 Risks faced by Hainan banana industry

Risks of banana industry refer to elements and influences on enterprises caused by all steps of banana industrial chains which is activated by both outer and inner environmental functions. The research makes a discussion on the risks faced by Hainan banana in terms of four aspects. They are marketing risks, natural disasters, information risks and production risks.

2.1 Marketing risks Consumption market in Hainan is limited and 90% of banana is exported. The high dependence on overseas markets and agents, the instability of markets contribute to the generation of marketing risks. The marketing risks of Hainan banana industry embody on mainly the fluctuation of banana prices, the main reasons of which are unbalanced demands and needs, the assimilation of products, enlargement and changes of markets, the low abilities of banana commercialization. with rapid development of about 10 years, Hainan banana industry faces problems such as rapid enlargements of planting areas, fast growing of outputs, dislocation of production, supplying and sales. All of which result in phenomenon that the reasonable bearing abilities are far surpassed. Besides these, banana in Hainan lacks deeper processing and the additional value is too much low. What's more, banana in Guangdong and Guangxi are enough at present in markets at home. All of which seriously squeezed the marketing space of Hainan banana. Therefore, when there is any marketing fluctuations, the weak banana industry may be involved in phenomenon that supplying is far more than demanding which is finally results in continuous low price, sharp reduction and backward sales of Hainan banana. Facing the inner competition at home, Hainan banana at the same time faces globalization of inner markets. In 2001, price of Hainan banana collapsed with the competition of the imported banana. local prices decline from 2 Yuan per kilogram to 0.1 Yuan per kilogram which caused great loss to farmers who live on planting banana. With the establishment of China – Asean Free Trade Area and the contract of economy and trading cooperation, the advantages of costs, quality of Hainan banana have been further weakened. The declines of marketing competition and advantages means the loss of markets and the more possibility occurring marketing risks.

2.2 Natural disasters Natural disasters refer to the loss of production and management because of the deviances of quali-

ty and quantity of bananas which are caused by the unpredictable natural factors, directly influencing the production process of bananas. The obvious features are the objective existence, wide affection, difficult to control and deeper and deeper influences. The largest natural disasters to Hainan banana are classified into the following types: the first is typhoon. Most parts of Hainan are in tropical monsoon climate belt with more than half of a year dominated by typhoon. So, production period of banana is lapped with typhoon period. Typhoon is a deadly threat to bananas which are weak to wind risk. In November, 2003, typhoon Burt caused almost an area of 20 000 hm² bananas collapsed and died in the main production area in Hainan, Ledong and Dongfang. It suffered great loss. In September, 2005, Davey located in Hainan Province and 80% of banana were suffered; the second is pests. High temperature and wet tropical climate supplies greatest environmental conditions to pests. According to materials, kinds of pests threatening Hainan bananas reach up to 35^[3]. Once pest diseases produce and transmit, loss caused by which would be serious. Banana withering disease in recent years is even a devastating one. With the becoming regional distribution, scaled production, transmission of pests become much easier and the forecasting, prevention of pest disease are more challenged. The third is drought. The main clustering areas of Hainan banana is in the west of Hainan where water resources are not well distributed between time and space. This area is easier to be drought which can influence both the quality and quantity of bananas. Of course, under this circumstances, the marketing competition and quality advantages are further weakened.

2.3 Information risks Information risks are caused by inharmonious information and seriously wrong information. Banana industry may make use of information to reduce the uncertainty of management policies of farmers and then increase incomes. However, because of the education degrees and qualities of farmers themselves, farmers neglect to collect information, lack the willingness and motivation to analyse information and the abilities to identify the truth or falsity of information. The specific features of which are like the following: farmers are unaware of the agricultural policies and not punctuate to notice the prices and marketing information; farmers do not have the adequate advanced techniques to produce bananas; they accept information unconditionally. Because the lack of marketing information and backward information, farmers are usually difficult to expect the related costs, risks and profits. The blindness of production must result in deviance of banana supplying from social demands and sharp twists of production. The fluctuation of production not only constraints the steady increment of planter's incomes, but also not benefits the sustainable development of banana industry in Hainan. Widening of international markets and avoiding technical barriers require adequate and punctuate information. Or when exported, goods may face trading arguments such as refusal, canceling of orders, compensation, ending of contracts and trading and inspection of anti-dumping. Banana cancer and SARS in banana caused great loss to Hainan banana industry and price dropped sharply from

3 Yuan per kilograms to 0.2 Yuan per kilograms in short time. During the rumour period, planters suffered 14 million Yuan a day and more than 1 million farmers suffered from this loss. A total area of 25 000 hm² suffered from this rumour and planters lost 822 million Yuan in this disaster^[4]. High price in this period reflects the importance of information in marketing economy.

2.4 Production Risks Production process is the weakest one in banana industry with lots of uncertainty, which is easily interfered by outer environmental conditions.

2.4.1 Production problems of seeds resources and young plants. Main seeds in Hainan are more or less similar to each other, lacking diversification and storage seeds. There are withdrawing of seeds because of long time neglect. While during the production of seeds, risks such as variation, withdrawing and virus-bringing cannot be certainly avoided.

2.4.2 Technique risks. Usage of techniques not only brings profits and efficiency, but also risks behind. Usage of techniques must result in recombination of production factors which must cause changes of quantity and structure of factor. Therefore, production environmental conditions and qualities of planters are highly required which further lead to many new types of risks. Such as increasing investment, selecting new techniques, using new techniques and marketing risks when using techniques and so on.

2.4.3 Agricultural investment risks. The exploitation, the operation, the management and services of agricultural techniques in China need to be perfected further and not all farmers are qualified with abilities to identify the truth and falsity of agricultural techniques. So, during the process of putting into practice the new techniques, there are risks of using techniques wrongly. And at the same time, illegal usage of agricultural investment products increases the possibilities of risks.

2.4.4 Problems of qualities. Farmers planting bananas should be qualified with higher qualities. So they can master and use the related production and management techniques; they can produce bananas according to the requirements of technical demands and standards. Producers who do not know techniques or cannot use the related techniques cannot reach the goal, or producers who are not good at managing, unaware of marketing rules may result in failures, becoming the sacrifices of markets.

3 Forecasting policies accelerating the development of Hainan banana industry

3.1 Strengthening the guidance on forecasting mechanisms of banana industry Forecasting mechanisms of banana industry involve several departments which need comprehensive arrangements, positive cooperation and activating many other parts. Administrative supervisors should strengthen the guidance on forecasting mechanisms, increasing awareness of forecasting, affirming that forecasting jobs of banana industry are the important steps in serving problems about agriculture, countryside and farmers; identifying the forecasting jobs as the important agenda in developing rural economy; clarifying duties of all departments; cooperating with other depart-

ments to create an environment according to duties that cooperated with each other and motivated by each other to practically function the leading, organizing and promoting roles of governments on forecasting jobs for a better outer environment of forecasting mechanisms of banana industry.

3.2 Construction of forecasting mechanisms of Hainan banana The main reasons of crisis in Hainan can be summarized into 2 points. The first is the lacking of forecasting mechanisms, which makes affairs accumulated and deteriorated and finally leads to crisis; the second is the united management mechanisms concerning about industrial safe information which have not yet come into being. Government supervisors do not have the punctuate and comprehensive potential crisis information which result in inadequate reaction of government supervisors to the coming crisis. Therefore, construction of a perfect and efficient forecasting mechanisms of Hainan banana will play an important role in forecasting crisis of banana industry in Hainan.

3.2.1 Construction branch systems of forecasting mechanisms of banana industry in Hainan. The first is to design the scientific standards classifying forecasting mechanisms and classify the potential risks with united standards. Standards can be designed from the following aspects: loss caused by risks; area risks spreaded; relationship degrees of risks and farmers involved; the authenticity of information resources and focuses of arguments and so on. Degrees of forecasting mechanisms can be divided from highest to lowest: the largest, the larger, the large, the general respectively marked by red, orange, yellow and blue. The second is to affirm degrees of forecasting emergency. Design four emergency degrees corresponding to four forecasting degrees and confirm the corresponding departments reacting to different emergencies. The largest, the larger, the large, the general are respectively charged by organizations in province, city, county and local areas. The superordinate departments are in charge of supervising the operation and supply necessary supports.

3.2.2 Construction of information supervision and collection systems. Establish special forecasting inspection organization, the main tasks of which is to supervise the conditions of risks resources of banana industry. The main contents of supervision include the following aspects. The first is to supervise the potential profiting indexes, the dynamisms of prices, the economic, social and ecological efficiency, conditions of production investment, infrastructure, comprehensive production abilities, conditions of international markets and prices, conditions of governments operating policies, advantageous combination of production factors, intensified production and industrial management in general planning markets of banana.

3.2.3 Construction analysing and decisions making systems. Information analysis is the most important step in forecasting systems. Results of analysis directly decide the measures adopted and the outcomes. The qualitative parts mainly are taking advantages of high educational institutions, research departments and government to establish experts team who make punctuate, high-efficient analyses, identification and arranging

on the collected information and finally classify banana industry in Hainan into different types. The expert team analyse and predict the outputs, marketing demands, price trend and marketing risks. And at the same time, they will put forward countermeasures avoiding risks of banana industry in Hainan. Qualitative evaluation method adopts quantity dealing measures which is usually realized through evaluation indexes. The selection of evaluation indexes can be the key index and systematic indexes.

3.2.4 Construction of information distribution and sharing systems. The final goal of forecasting is to realize sharing of information and clear the threats and risks, protecting industries and realizing profits to the largest degrees. Construction of systems should take advantages of modern communication techniques, network, mobile phone, TV and other media, newspaper, magazines and other transmission agenda, channels and so on. Distribution system function of weather forecasting should also be broadened, increasing contents of information distribution, constructing different distribution systems corresponding to different receiving mechanisms. Distribute punctuate, accurate and rapid forecasting information to the public and managers, realizing the rapid spreading of information and making managers acquire adequate and valued information in time. So, through this, unsafe factors will be controlled at the preliminary stages, individual level and in occasional accidents.

3.3 Strengthening the construction of emergency dealing of banana industry Risk emergency dealing is an important compensation measure when agricultural managers face risks. Punctuate compensation can greatly lower down risks and reduce losses. Usually the emergency dealing systems are not perfect when facing natural disasters, changes of marketing supplying and demands and non-tax trading barriers abroad, which result in incorrect dealt and more serious suffering^[5]. The strengthening of emergency dealing construction needs firstly formulation and perfection of emergency risk cases of banana industry, making it clear the emergency measures and dealing procedures of main risks in banana industry, further perfecting related emergency dealing cases corresponding to the deeper, subordinate risks and crisis caused by banana industrial risks. Secondly, strengthening the construction of team reaction abilities and further strengthening the construction of special teams and expert team responding to industrial risks, improving techniques and technical equipments, upgrading qualities of teams and continuously increasing abilities reacting to different kinds of banana industrial risks. The last is to analyse the influences of risks according to signals of industrial risk warning and industrial risk forecasting and grasp time to start relative emergency cases to adopt efficient risks forecasting and emergency dealt measures.

3.4 Further perfecting risks defending and guarantee systems of banana industry With the improvement of the scientific techniques supporting abilities in defending risks of banana industry as the goal, investment on techniques and beneficial policies should be enlarged; construction of creation systems of weather forecasting techniques should be accelerated. The

main point is to study on scientific techniques of defending, forecasting and happening mechanisms in banana industry in Hainan and the accompanied subordinate risks of which. self-creation abilities and qualities of the supervision and prediction techniques of weather disasters forecasting should be improved and policies, rules and systems relative to risk defending jobs should be accelerated and perfected of banana industry in Hainan; industrial risks inspection, forecasting, evaluation, services and defending technical norms and standards should be perfected. All of which aim to promote the normal management of risks defending jobs of banana industry in Hainan and protect the successful operation and healthy development of industrial risks defending.

3.5 Accelerating normal production of banana and improving marketing competition The first is through radio, TV, newspaper and network, special speech, scientific speech, training and presentation to broadly propagate agricultural normal knowledge and knowledge of banana, shifting attention of planters from quantities of outputs to qualities of outputs and increasing normal production awareness of farmers positively. The second is to guide and support positively the enterprises of banana, large-scaled managers and cooperatives to establish the normal banana garden; establish the normal production management systems connected to international; by construction of normal garden, propagating standardization to seeds cultivation, planting, procession, package, transportation and storage through pot to space, harmonizing techniques, standards, brands and sales and so on. Upgrade the brand awareness and improve marketing coverages through united brand and sales techniques to strengthen marketing competition of Hainan banana.

3.6 Accelerating development of agenda and improving industrial organization degree At present, banana committees in different regions function as agenda, Which have not yet established the steady mechanisms sharing profits and undertaken risks with farmers and enterprises. Supporting on farmers' cooperatives, such as banana committees, should be enlarged, leading farmers, employees, small-scaled managers to be united, join together, through sharing loans, scattering management, unitedly managing and selling to refresh the management mechanisms, develop scaled production and finally solve inharmonious between small managers and large markets. Through leading the development of banana committees and leading enterprises, the development of industrialization management of banana could be accelerated and finally the organic combination of production, procession and sales are promoted.

3.7 Strengthening the technique creation training of banana and improving scientific techniques of banana industry In order to improve the techniques contribution in banana planting, departments should depend on university, scientific institutions and make full use of network to propagate agricultural techniques; enlarge training course and intensify techniques training on technical bones, large managers and rural able through experts speeches, clustering training course and technical classes

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of ecological security in Jiangsu Province, GM(1,1) grey forecasting model is used to forecast the changes of per capita ecological deficit and the ecological footprint pressure index of Jiangsu Province in the next five years, showing that the per capita ecological deficit and the ecological footprint pressure index will grow at the speed of 4.11% and 3.68% each year, respectively, and their ecological statuses are extremely unsafe. Since ecological security affects the development of economy, corresponding measures should be adopted in order to achieve the coordinated development of ecological security and economy of Jiangsu Province. Firstly, strictly control the population growth, and reduce the consumption of energy and natural resources by population growth. Secondly, rationally utilize the land resources, effectively protect and manage the use of cultivated land, grassland and woodland, and reduce ecological footprint. Thirdly, strengthen the ecological restoration and construction and improve the ecological carrying capacity. Fourthly, intensify propaganda of ecological and environmental protection and enhance the awareness of ecological protection of citizens.

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to promote the standard cultivation techniques, one-step production techniques of water and fertilizer, techniques defending pests, fertilizer techniques and economical irrigation and so on. The last is to improve the technique levels in production of banana managers and help to solve technical difficulties and finally break bottleneck of development.

3.8 Developing deeper procession of banana, extending industrial chains and weakening industrial risks All measures, such as refreshing thoughts methods, breaking traditional concepts, with markets guided and additional values as goals, transferring the traditional marketing mode which is dominated with sales of fresh fruits to marketing mode which is dominated both by fresh fruits and processed products, accelerating the construction of important projects of banana industry, cultivating leading enterprises, spinal enterprises, promoting further process of banana and extending lifetime of sales, contribute to better interaction between production and sales. Based on the guidance and leading of enterprises, the up-

grading of industrialization would be realized and industrial risks could be weakened.

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