Advance Journal of Food Science and Technology 6(2): 184-190, 2014

DOI:10.19026/ajfst.6.8

ISSN: 2042-4868; e-ISSN: 2042-4876 © 2014 Maxwell Scientific Publication Corp.

Submitted: September 16, 2013 Accepted: October 04, 2013 Published: February 10, 2014

Research Article

The Motivation Analysis of Rural Land Circulation and Legal Countermeasures Research

Yongyong Zhu
Civil and Commercial Law School, Southwest University of Political Science and Law,
Chongqing 400031, China
Department of Economics and Business Administration, Chongqing University of Education,
Chongqing 400067, China

Abstract: It's the aim of this rural land circulation article to develop China Modern Agriculture, to achieve scale operation, to solve the Three Rural issues. Rural land circulation is the trend of China's agriculture development. It is the key of Three Rural issues. In the background of maintaining coordinated developments in rural and urban regions and the background of the constructions of new socialist rural area, we should encourage the various the rural land circulation forms, encourage the farmers to give up the contracted land voluntarily, encourage the movements of rural collective construction land. We should not only support the collective economic organization actively participating in rural land circulation but also lead the various main businesses participating in rural land circulation. All those will speed up the circulation of rural land. It promotes the scale rural land business running and rational usage of rural land by expanding business scope, increasing the scale management level, reasonably handling vacant houses and house sites in rural areas. There are supportive policies such as strengthening financial support and credit financing, optimizing infrastructure and service system, perfecting service systems and social security.

Keywords: Agricultural modernization, household contract responsibility system, rural land circulation, three rural issues

INTRODUCTION

Land is production factor, only the reasonable flowing of land accelerates its utilization efficiency, which shows its character as production factor (Peng, 2010). The land circulation is general trends of future (Xu, 2011). In 2013, Central Committee and the State Council announced "several suggestions about speed up modern agriculture, to further enhance the vitality of rural agricultural development". It points out that the solving farmers' problem in rural area has became the top priority of current work. By the end of 2012, the circulating land in China is about 270 million. There are more than 270,000 householders includes professional investors or family farms households runs more than 100 mu land. Rural land circulation means the activity of the rural household contract land keeps contract right in legal way, transfer the it's right of management to other farmers or other economic organization (Kerselaers et al., 2013). It is the product of rural economic development when it develops to certain stage (Long et al., 2012). We can develop large-scale, intensive, modern agricultural management mode through circulation of rural land (Zhu, 2013a, b, c). The premise of rural land circulation is clear ownership. clear property right of contracted land (Zhu, 2013a, b, c). It defines the interest field of land users. It assures

the circulation of land gets the protection of law (Xu et al., 2011). Property means the all society or part of society, or one person owns the ownership, right of disposition and the right of remuneration of total assets or parts assets. The market mechanism is not able to function properly when property right is unclear (Colin, 2013). The circulation of land must remain the nature of the agricultural land (Rodríguez et al., 2013). China has 1.3 billion populations, arable land is limited. The transferred land must be used for agricultural production. Otherwise it's against the fundamental objective of land's circulation. The circulation of land in China needs to be raised to environment protection level (Hu, 1997). It connects the economic benefit and zoology benefit, which helps the concentrated plant, intensive scale management, helps to save the production cost, to promote the agricultural development and farmers' income, to realize sustainable development.

MATERIALS AND METHODS

The main type of current rural land circulation is land swaps, lease, buy a share, cooperation, etc. Subcontract is villages and towns agree to lend farmers' land to units or individuals. The subcontractor pays community the contract fee. The farmers who transfer the land' use right will get the economic compensation from the community. On the basement of respecting the land use right of farmers, the subcontract changes the scattered planting pattern, realizes regional scale management of agricultural production. It is benefit for unified planting and harvesting in later period management process. The land share cooperation means the farmers exchanges the land contract right and use right for some shares in community. Land stock cooperatives or joint-stock companies established by the community carry out the joint stock cooperative system (Farstad and Rye, 2013). Land subcontracting means the original contractor lend use right of land to third party, but the obligation and rights listed on contract remains the same. There is no economic relation between the new subcontractor and the land owner. The two parties sign the subcontract agreement to define their obligation and rights according to economy, technology and social condition at that time. The land circulation means the original contractor signs the agreements with third party. The contractor' right and obligation are being use transferred to the third party. Land swap includes the exchange organized by collective and exchange between farmers, such as the villages and towns overall plans of food fruit and Forestry Industrial Zone according to the needs of large-scale cultivation (Zhu, 2013a, b, c). The collectives organize the exchanges of land, which helps farmers to choose the ideal planting way as they wanted. Considering the land decentralization and easier planting, the land owners will subject their lands to exchange for the others'. Entrusted operation means farmers are not will to sell their land even he goes out, so he entrust others to operate. The income distribution will be settled down after their negotiation, such as professional farms, agricultural machinery professional cooperatives and food professional cooperatives. They uniformly implement plough, seedlings, planting, plant protection and reap, realize land farming socialized service, improve the efficiency of farming land.

It researches the current land subcontract relationship, perfects the legal system. In accordance with voluntary paid principle, it leads the orderly flowing of use-right grant by contract for agricultural land. It encourages the trends of professional investors, family farms, farmers' cooperatives (Wei and Zhao, 2009). It develops various forms of moderate scale management, encourages farmers to solve the land's problem of being too scattered and small under a mutual benefit and exchange ways. The current law of community land use right circulation refers to city real estate management law, land management law, guarantee law, etc. City real estate management law, article 9 states all collectively owned land in urban area needs to be transferred into state-owned land, because only the use right of state-owned land are for sale. Land management law, article 63 states the use right of

farmers' land and communities' land are not for sale, transfer or rent in non-agricultural area. Except for one situation, when the company obtains the land for construction purpose complying with general land use planning, but then use right are been transferred owing to bankruptcy, merger and acquisition problems. Article 43, any unit and individual development are must apply for state-owned land according to law if they are in need of land. Except for collective economic organizations of peasants' collective ownership of land are used for developing township enterprises or building houses for villagers in accordance with the law. Except for collective economic organizations of peasants' collective ownership of land are used for the construction of public facilities and public welfare undertakings townships. The guarantee law, article 36, the land use right of township enterprises are not able to be used as separate mortgage. Where the plant of a township and village enterprise is mortgaged, the right to use construction land within the area of such plant shall be mortgaged together. Article 55, where the land use right of contracted wasteland is mortgaged, where the land use right of constructions of township enterprises workshop or the land with the area of such plant are mortgaged, the nature of collective land and land use are not able to be changed without legal procedure after mortgage. Therefore, the use right of township enterprise land are not suitable for the transfer, leasing, rent in nonagricultural area, the right of mortgage the land is restricted by law. It's not allowed to change the collective land ownership and the use of land without legal procedures. With the adjustment of agricultural construction, the development of secondary and tertiary industries and transfer of rural labor, the rural land circulation is speeding up. Different from the strict ban of land management law, the policy of use right of rural collective land circulation gradually relaxed.

DISCUSSION

In 2003, CPC central committee and the state council concerning agriculture and rural work opinions states as follow. All parts of country should formulate policy of small town to encourage the development of township enterprises, properly solve the land problem of villages and towns through the land circulation of collective constructions, land replacement, installment payment of leasing. In 2004, the decision of the state council on deepening the reform of strict land management states as follow, on the premise of conform to the planning, the land use right of farmers collectively-owned rural constructions in villages and town are ok for legal circulation. In 2006, ministry of land and resource announced in notice of insisting on economical and intensive land use in accordance with the rules in accordance with the management supports

construction of new socialist countryside as follow. With the permission of ministry of foreign trade and economic cooperation, we need to meet the requirements of new socialist countryside construction, steadily boost the experimental units of joining the addition of urban construction land and reduction of rural construction land, to boost the experimental units of collective non-farming construction land use right. We need to sum up the experience of running the experimental unit, to standardize and perfect in a timely manner. In 2008, decision of the CPC central committee on rural reform and development of a number of major issues states as follow, outside the scope of urban construction land inland use planning, those public welfare projects get approval of using the rural collective construction land. It allows the farmers to participate in its development and running to guarantee the farmers' legal interest. It gradually establishes a unified urban and rural construction land market. The rural collective construction land obtained in legal way must transfer the land use rights through unified tangible land market in opening and normative way. It shares the same equality as state owned land on premise of accordance with planning. It defines the basic types of use right circulation of rural collective construction land. It involves its running and transferring. It also stipulates the planning premise of transferring, the ways of transferring, the principles of transferring and the protective regulation regarding their rights (Long et al., 2009). It points out the use right circulation direction of rural collective construction land in future.

With the expanding of land circulation and richness of forms in transferring, it promotes construction adjustment of agricultural area and management of industrial products, promotes land's operation at a proper scale. It's one way to increase the farmers' income by investing more in agricultural area. The big difference in agricultural development of east area development and west area is caused by far-behind minds, the disadvantages of household responsibility system, unsound market mechanism and management institutions, large land of China and its complicated terrain. The farm land circulation has below problems.

With the development of society, the property right is from paying attention on real control rights turn into paying attention on their rights of access to its cost and financing. As property right, the rural land contract right should has financing function. But guarantee law in our country requests the rural land contract right mortgages are not allowed to be set up. Guarantee law, article 34, there is no rural land contract right listed in kinds of mortgage rights. The contractual right of land farmers owned is incomplete property right. It is very difficult for the incomplete property right to form the land finance market. It holds-up the collateral value of farm land, holds-up the realization of land contract right value maximization.

The adjustment of agricultural construction promotes the development of secondary and tertiary industries, promotes expanding of the consumer market in rural area (Wang et al., 2010). The lack of fund and reliable financing channels during the development become the constraint of current rural area economic development. As property right, the contractual right of land has its own value. The farm land circulation and the realization of land value are under restrictions because of our agricultural policies. The scattered production operation is very difficult to get rid of the bound of small-scale peasant economy. It restricts the adjustment of agricultural construction, affects the starting and development of the industrialization of agriculture. It's very difficult to develop the scale production while the contracted land is very small. The subcontract land leads to more difficulties in increasing farmers' income under the way of limited contracted land. There is no extra land for expanding the operation scale while their lives may not be guaranteed if giving up the contracted land. The limited land restricts the development of agricultural production, which leads to the wasted of agricultural land.

The land circulation operations are Non-standard. The land circulation does not get the approval of rural collective economic organization. Most of the land circulations between farmers are only oral agreement without any written contracts. Even there is written contract, its contents are not complete without clear terms and subjects. It is even against the current rules. For example, the real rented time is longer than contracted time, the farm land is transferred into non-agricultural usage and people take opportunity to hype on land. The contract does not get the approval of township government contract management institutions and notary organ, the lack of complete land circulation contract records and etc.

RESULTS

It's the objective requirement of developing agricultural economy and modern agricultural to speed up the agricultural land circulation, to promo the development of scale-production. The land circulation is the result when rural social development to a certain stage. Concerning the vital interest of the farmers, we must handle it according to the situation of social economy development. Based on the stability of rural land contract relations, target on enhance land resources reasonable effective configuration and promoting the industrial development, agricultural efficiency and farmers' income, so we should be optimize agricultural production factors, increase land use rate and rate of output, increase the operation industrialization level of agricultural, promote urban-rural integration development.

We are not able to protect the validity of land use right circulation until definite the law meaning of land contract right for farmers. Based on stable household contract system, rural land circulation insists scientific outlook on development, builds up the legal valuable land transfer system under government guidance, market regulation, farmers voluntary. With separation of collective ownership of rural land, farmers contract right, the right to use the operator, with the clear ownership, stable contract right, with the opening of use right, we can enhance the level of land scale operation, promote the overall economic, social and ecological benefits, speed up the development of modern agriculture, promotes the build-up of new socialist countryside and harmonious society in which the urban and rural areas fully developed (Ruiz and Domon, 2012).

Stabilizing the household contract responsibility system: The circulation of rural land and development of scale operation need stable household contract management system. On the premise of no change of land contract relation, it goes with the separation of the ownership of land, contracting right and land usage right. It brings forth new idea of circulation system, discover effective ways, free the use right of land. We need to promote the circulation of rural land and development of scale operation according to the law or regulation. Protecting the cultivated land and basic farmland, we are not allowed to change the usage of agricultural land. Respecting the wills of farmers, we cannot force or stop the circulation of farm land. The circulation of farm land should follow the law of value, insist on equivalence paid circulation. The both parties settle down the reasonable economic compensation to make sure the benefit of farmers and stability of production and lives are under protection. Based on the use of land resources, we need to run the circulation of farm land and industrial development under relatively concentrated, moderate scale management (Halfacree, 2007). It focus on optimal configuration of land and other production factors, promotes the usage rate of land and rate of output, increase the grain yield, agricultural efficiency and farmers' income. It boosts the circulation of agricultural land, strength the managing and guiding during the process of developing scale operation.

About the use right of house sites, considering the features of usufructuary rights and survival rights, we should reconcile the relations of survival interests and property interests to make sure the fairness of initial rights configuration, to prevent the survival crisis and speculation caused by transferring of rights. If we overemphasize property interest, then we should not place too many specifications on limiting the disposal right, otherwise the right loser may lost his foundation based on urgent needs. If we overemphasize the

survival rights, then it may against the nature of private property rights owing to fairness principle. Considering the land use right of rural collective public welfare infrastructure land belongs to public rights, we should guarantee rights of public utility and public usage. If the right transfer is allowed, then we need strict votes meeting system to make sure its public benefit nature would not be changed after transferring. About use right of farmer collective operation construction land, considering usufructuary right and public interests, we need to finalize the use right law system of farmers collective operation construction. It includes kinds of regulations such as the premise, restrict, procedures, methods and efficacy of defining rights. The rights transferring law system of farmers collective operation construction land should includes kinds of regulations such as the transferring ways of obtained rights, transferring contract, limits of transferring, updating the registration, etc. The use right management law system of farmers collective operation construction land should defines the definition, obtaining, usage and supervision of rights (Michelini, 2013).

Speeding up the rural land circulation: There are kinds of ways to speed up the rural land circulation such as encouraging various land circulations, encouraging farmers to give up contracted land voluntarily, reasonably running the rural collective construction land circulation, supporting the community economy to participate in the land circulation, leading kinds of business entities to participate in rural land circulation and etc. Farmers can transfer the contracted land in many legal forms which in accordance with laws and regulations such as subcontract, transfer, exchange, becoming share holders and etc. The assignee of rural land circulation is contracted farmers or organizations and individuals who get legal approval of participating in agricultural production and operation. Accomplishing the circulation of rural labor force and rural population, we encourage farmers to turn into urban registered permanent residence, encourage farmers work in town for a long time or having stable career in fixed place to give up the contracted land voluntarily. The farmers who give up the contracted land will get economic compensation, the farmers give up the contracted land voluntarily then become the urban residents will share the same treatment and social insurance as local residents. On premise of accordance with general land use planning and other planning, the community economic organization could use the community construction land which been legally approved and obtained the community land usage certification. We participate in agricultural production operation and development of profit-making rural infrastructures through becoming shareholder of land use right. We can establish enterprise alone or run business together with leading

enterprises which own social capital, or circulating the collective construction use rights in various forms on premise of getting most members' approvals.

Applying the construction land quota replacement and turnover policy actively, it supports the crossregional paid reasonable flow and transfer of farm community construction land use right and its quota. Developing the rural cooperative economic organizations and farmers' professional co-operatives actively, it encourages farmers to join the production through selling the land contract operation rights to obtain the share holders. It also supports the farmers to carry on the farmers professional cooperatives, to develop large area the circulating land. It's been requested to change the initial rural cooperative economic organization into farmer professional cooperatives. It shall be registered in a timely manner if it meets the requirements of registration. The social capital and business enterprises in cities are allowed to undertake or rent the lands in rural area, to establish enterprises alone or together with farmers. Both the rural land circulation involves social capital, business enterprises in cities and cooperatives working with farmers share policies which supports the cooperative economic development in rural area. The rural area enterprises using land circulations are established in accordance with law. They can get supports of policies which promoting the developments of private enterprises, small and medium-sized enterprises. In order to improve the operation of large area land circulation and out-put efficiency, we can integrate the development of advanced characteristic industry, connecting large area contract circulation land to realize intensive development and continuous planting. Migrant farmers can host and contract land through collective economic organizations or transfer service organizations. Collective economic organizations or transfer service organization can organize and circulate hosted contracted land. The profit of circulation belongs to the original contractor. After getting the original contractor' approval, the circulated land could be transferred again under the way of sub-contract or rent. When the land is obtained through sub-contract and exchange, the land can be transferred directly.

Promoting the rural land scale operation and reasonable usage: It promotes the rural land scale operation and reasonable usage through expanding the business scope, enhancing the business level, reasonably dealing with vacancy house and house site. It encourages village cultivation experts, professional farm and kinds of business owners to build up farm produce production base through land circulation. Carrying out the land scale management, it leads the land circulation and scale business operation to concentrate on advantage industries in advantage area. Focus on the function of professional farm land, leading

enterprises and agricultural technology services institutions, we organize the farmers according to products' features. We achieve the aim of scale operation through unified layout, unified quality standard, unified training, unified brand and unified sales. When the scale operation owners are adjusting agricultural construction, developing featured industries, their crops planting, livestock and poultry breeding. aquaculture and agriculture science experimental facilities belong to agricultural area. Respecting and protecting the autonomy management of business subjects, on premise of accordance with planning and policies, replying on rented lands and main business, kinds of business entities use its resources, elements and facilities to develop the processing, service and etc business. We should lead the farmers to live in town and central villages according to requests of unified planning, centralized construction and economical intensive land use. The farmers who have residences in work place or town can rent or sell their original houses in accordance with the law. But applying new house site is not allowed after they rent or sell their original houses. On premise of accordance with land usage overall planning, the scale management agricultural enterprises are allowed to pay for using the farmers' house sites and house to run business. The farmers are allowed to conduct farmhouse touring and etc activities on legally obtained house sites. We encourage the government to use house sites and empty houses the farmers give up voluntarily on arranging houses for high hill poor migrants and ecological migrants and etc. We uniformly plan, renovate and centralized settle the given up and replaced house sites. We can also change those house sites into farm land after renovation. The renovated farm land can be paid transferred again.

Policy safeguard measure: The farm land has policy safeguard measures through increasing financial support, strengthening the financial credit supports, optimizing infrastructure conditions and perfecting service system and social security. The local government will take some capital quota out from agricultural income. The money would be used on encouraging the circulation of land, developing the scale business subjects, more efforts on water conservancy, transportation, energy, land consolidation and rehabilitation, standard farmland construction and advantageous agricultural products base construction, investing more in agricultural infrastructures. Putting the scale operation business on priority, optimizing infrastructure, we will cultivate the key industries, develop the leading enterprises. According to their conditions and industry development direction, the regional governments set up a support mechanism, improve and perfect the investing methods of financial capital, support the public agricultural funds to be used

on leading industry in advantage area, intensively create advantage industry and increase the fund utilization efficiency. Finance institution should supports and services the scale enterprises more. They should provide the leading and base construction the credit supports on premise of accordance with credit policy. All those scale business such as industrial leading enterprises, planting large, farmers' professional cooperatives and agricultural enterprises are under the service scope of financing guarantee platform. Actively exploring and building effective social security in rural areas, it promotes the pilot reform of rural retirement provision system, gradually expands the scope of insurance. About those farmers who settled down in towns and cities where they have stable career and residence, they can exchange their land contract right for township social insurance, exchange their rural homestead-land-use-right and house property for urban community housing. It promotes the development of rural scale operation in rural area and the orderly transfer from rural resident to township resident. Building up the land contract in cities, districts and counties, villages and towns and the circulation information system as soon as possible, all agricultural departments carry on their duties to guide, service and manage the land circulation, to do a good job of dispute mediation and arbitration, to encourage the social intermediary organizations to participate in rural land circulation. The contractor should issue the land transfer authorization letter if the circulation is under entrusting. Once they agree the transferring, we should sign written transferring contact according to unified standard of transferring contract, define the rights and obligation, responsibility for breach of contract and etc., for both parties.

CONCLUSION

The features of the rural land circulation is featured as fast flowing, diversification of flowing type and flowing main subject, mainly trend of short time circulation, market decides the price, various renting fee payments and etc.

The form of land circulation includes planting large, leading enterprises, professional cooperatives, the collective unified management, share cooperation management. It is the trend to enhance the organization ability of circulation, grain is top priority, the farmers' benefit gets effective protection, encouragement from government and etc. Both speeding up the rural land circulation and expanding the enterprise scale relate to not only the benefits of the broad masses of peasants and business subjects but also the big picture of rural reform and its development. The land circulation has positive influence on optimizing configuration of rural resource, promoting the construction of modern agriculture, enhancing the quality of agricultural industry, increasing farmers' income and life style of farmers. We need to

implement land contract relation during promoting the formal land circulation. Through rural land circulation, it promotes the transfer of rural labor, the construction adjustment of rural economy, scale management of industries, development of rural cooperative economy and solution of rural wasteland. Making more efforts on enhancing the active guidance on rural land circulation and development of scale business, it improves grassroots cadres and masses' understandings of speeding up land circulation and developing the business scale. Allaying people's fear, it reaches the consensus and motivation of promoting rural land circulation and scale business management. Through cooperation between the systems such as law, the production and business operation, the flow form, social security system, government department at all levels should actively guide and cooperate with each other to improve the service and management of land circulation finally.

ACKNOWLEDGMENT

This study was supported by Chongqing City Board of Education Science and technology project and the Research Foundation of Chongqing University of Education.

REFERENCES

Colin, J.P., 2013. Securing rural land transactions in Africa: An ivorian perspective. Land Use Policy, 31: 430-440.

Farstad, M. and J.F. Rye, 2013. Second home owners, locals and their perspectives on rural development. J. Rural Stud., 30: 41-51.

Halfacree, K., 2007. Trial by space for a 'radical rural': Introducing alternative localities, representations and lives. J. Rural Stud., 23(2): 125-141.

Hu, W., 1997. Household land tenure reform in China: Its impact on farming land use and agroenvironment. Land Use Policy, 14(3): 175-186.

Kerselaers, E., E. Rogge, E. Vanempten, L. Lauwers and G.V. Huylenbroeck, 2013. Changing land use in the countryside: Stakeholders' perception of the ongoing rural planning processes in Flanders. Land Use Policy, 32: 197-206.

Long, H.L., J. Zou and Y.S. Liu, 2009. Differentiation of rural development driven by industrialization and urbanization in eastern coastal China. Habitat. Int., 33(4): 454-462.

Long, H.L., Y.R. Li, Y.S. Liu, W. Michael and J. Zou, 2012. Accelerated restructuring in rural China fueled by 'increasing vs. decreasing balance' landuse policy for dealing with hollowed villages. Land Use Policy, 29(1): 11-22.

Michelini, J.J., 2013. Small farmers and social capital in development projects: Lessons from failures in Argentina's rural periphery. J. Rural Stud., 30: 99-109.

- Peng, H., 2010. Transferring price of rural land use right with NPV and game analytical method. Agric. Agric. Sci. Proc., 1: 372-375.
- Rodríguez, L.J., M.R. Pérez, X.S. Yang, Geriletu, B. Belcher, B.Z. Zhou and Z.C. Li, 2013. Maintaining the contract responsibility system of forest land distribution in China: Evidence from a novel financial compensation scheme in Daxi village of Anji County, Zhejiang. Land Use Policy, 30(1): 863-872.
- Ruiz, J. and G. Domon, 2012. Relationships between rural inhabitants and their landscapes in areas of intensive agricultural use: A case study in Quebec (Canada). J. Rural Stud., 28(4): 590-602.
- Wang, J., J.M. Chen, W.M. Ju and M.C. Li, 2010. IA-SDSS: A GIS-based land use decision support system with consideration of carbon sequestration. Environ. Model. Softw., 25(4): 539-553.
- Wei, Y.P. and M. Zhao, 2009. Urban spill over vs. local urban sprawl: Entangling land-use regulations in the urban growth of China's megacities. Land Use Policy, 26(4): 1031-1045.

- Xu, H.Z., 2011. Theoretical and empirical research on influential factors of rural land transfer: Based on the perspective of occupation differentiation and pension security mode. Energ. Proc., 5: 397-402.
- Xu, Y., B.S. Tang and E.H.W. Chan, 2011. State-led land requisition and transformation of rural villages in transitional China. Habitat. Int., 35(1): 57-65.
- Zhu, Y.Y., 2013a. Strategies on accelerating agricultural modernization-taking tongnan county as an example. Adv. J. Food Sci. Technol., 5(9): 1132-1138.
- Zhu, Y.Y., 2013b. Strategies on accelerating agricultural modernization-taking qijiang district as an example. Adv. J. Food Sci. Technol., 5(8): 1015-1021.
- Zhu, Y.Y., 2013c. The strategy research of developing the modern agriculture transformation in resources exhausted cities-taking the wansheng as an example. Adv. J. Food Sci. Technol., 5(6): 758-764.