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## **Share the Results of Promoting Agricultural Circular Economy in the International Seminar of Circular Agriculture in Taiwan**

Min-Hsien Yang, Professor, Feng Chia University, Taiwan

Tung-Shen Yang, Research Fellow, Rural Economics Society of Taiwan, Taiwan

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Agriculture is a fundamental and crucial industry in the development of a country. Division of labor in global agricultural economics has resulted in rapid agricultural development and the rise of great powers. While the dependence on food imports in countries with lower agricultural production has been gradually increasing, the growing carbon footprint of the food supply chain has become a pressing factor. With the current population growth, the global demand for food will increase 50% by 2030. To meet the world's future food demand, it is a desperate need to expand agricultural acreage, to provide necessary resources for agriculture, and to improve production efficiency of agricultural system. Moreover, the effect of climate change has made it harder to maintain food stability because of the imbalance between dry and rainy season, unstable sunlight and increased temperature. Since the speed of food production is not able to catch the expected speed of global population growth, there is a pressure in dealing with the food gap. With the external environment of agriculture that can barely be improved, circular economy focusing on internal changes of production structure of agriculture has become increasingly popular.

Currently, the promotion of agricultural circular economy in Taiwan has shown some promising results, yet it still needs to gain cooperation from other industries across different fields in order to achieve broad applications. Thus, it is needed to learn from other countries of their progressive experiences to optimize the current policy. For example, the European Union and Germany has implemented integral approaches for the circular economy that aimed to transform the agriculture through the development of the bioeconomy. The bioeconomy strategy has great potential to achieve a sustainable yield, with recyclable chemical materials and biomass energy, a better balance among recycled resources, improved production efficiency of natural resources and a fully reusable resources could be circulated within the industry chains.

Therefore, the council of agriculture held a symposium on agricultural circular economy on the 50<sup>th</sup> Anniversary of Taiwan-Germany Agricultural Cooperation on Mar. 27, 2017 and invited scholars and specialists from both Taiwan and Germany to share the results of implementing the agricultural circular economy. Commissioner Cong-Sian, Lin indicated that

the cooperation between Taiwan and Germany in the past 50 years has helped build a profound foundation for international friendship and policy exchanges on agricultural economics and many areas of social interactions, and will continue to nourish each other in the future. Furthermore, the European Union and Germany have set the circular economy as the strategy of national economic development. Taiwan with the limited natural resources should shift from the old model of linear production to meet the goals of sustainable development. The agricultural circular economy will be a vital factor for Taiwan in developing a sustainable agriculture.

Different participants may have different perspectives in terms of definitions, wordings and methods on circular economy during the seminar, but the main spirit lies on the transformation of resource management from traditional linear production (manufacture, production, abandonment) to circular production (resources, products, recyclable resources, products) in order to alleviate the increasing pressure upon limited natural resources. The principles of circular economy has evolved from the previous 3R (Reduce, Reuse and Recycle) to the current 5R (Reduce, Reuse, Recycle, Redefine and Redesign). It not only focuses on successful waste reduction and resource recovery, but also needs to reconsider the influence of circular economy through redefinition and innovation. Agriculture plays a crucial role in circular economy, as it requires a lot of natural resources yet it is facing high pressure to increase the food production due to the increase of global population. Therefore, it is necessary to promote agriculture production which is sustainable and circular, and fully utilize its value in order to avoid over-reliance on limited natural resources.

Agriculture faces numerous challenges in coming years, and sustainability needs to be the core value of agriculture development. Agricultural circular economy thus takes agricultural sustainable development as the goal that exceeds general expectations. Among the various discussions in the symposium, scholars from different countries have reached a consensus that agricultural circular economy not only can sustain the livelihoods of people, but the agricultural waste can also create a self-sufficient and regenerative loop through agricultural circular economy. Moreover, the results of successful cases can be extended to other fields of application such as health care, energy and fertilizer production. It would be difficult to deal with the ever-changing environment of agriculture if we fail to make the transition to a sustainable agriculture, and it would only be through a diversified agricultural system that we could ensure a sustainable future.

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