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Test Planning for Natural Circulation Farming Model in Agricultural Reclaimed Land

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Agricultural reclaimed land in Korea is increasingly being used for horticulture, grains, livestock, etc. However, soil of reclaimed land located in coastal lowland have so high salinity, poor fertility, high possibility of pollution that farming is difficult. Therefore, it is needed to promote desalination and fertility of soil and to reduce environmental burden through natural circulation farming. Therefore, we presented sustainable eco-friendly natural circulation model of agricultural resources in reclaimed land. The test complex was planned to apply circulation of energy and resources between horticulture and livestock focusing on Hanwoo, Korean-bred cattle. After comparing and analyzing the pH, organic matter, effective phosphate, potassium, calcium, magnesium, and electrical conductivity of the reclaimed land soils, and the general range soils, the appropriate number of Korean cattle was calculated. The estimated livestock manure of Korean cattle is used for liquid fertilizer, composting and energy. The total manure discharge can be calculated according to the area from one manure discharge. In addition, Pellet from cattle's manure was planned to be fueled and used as heating energy for horticulture facility. The greenhouse can be sized to a scale that meets the greenhouse's total heating load by calculating the total amount of energy generated from the manure. Therefore, plastic greenhouse-type horticultural complexes and livestock complexes including fuel facility using manure pellet are planned. So, natural circulation is completed as the manure of livestock provides the organic matter to the farmland and heating energy to the greenhouse. Additionally, agricultural product processing, sales and distribution centers, themed landscape agricultural complexes, ecological parks, agricultural tourism facilities, and observation facilities were arranged.