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Spatial analysis for production and consumption of agricultural products based on Computable General Equilibrium Model

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Risk analysis involves a fundamental spatial component. It is very important to deal with emission sources of chemical substances considering the spatial variation, particularly to hydrophobic substances. Chemical substances emitted from various source activities and move to vegetables, fish, meat and dairy products via environmental air, water and soil. As the measurement requires considerable labor and is extremely difficult, under the present conditions, chemical analysis is carried out only to some samples of agriculture products and target chemicals are limited. On the basis of the above, we expect to simulate the dynamic nature of chemicals and exposure population in order to support the detailed assessment of human health risks. We have tried to employ a transportation system to evaluate the risk posed by exposure via ingestion in daily life and reported the prototype transportation models for agricultural products developed on the basis of general gravity model (JPGU Meeting 2009). In this report, a new transportation model for agricultural products is developed based on Computable General Equilibrium Model, and a method for simulating transportation of agricultural products using this model is proposed. In addition, we will present some spatial structure of production and consumption for agriculture products using two models.

Keywords: Agricultural products, Transportation model, General Equilibrium Model, Demand, Supply