

# **Development of a Social System for Future Food Self-sufficiency via the Collaboration of Consumers and Farmers**

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Food is not only a necessity for keeping ourselves alive, but it is also a prerequisite to a sound and contented life. Compared to the other main advanced countries of the world, however, the ratio of food self-sufficiency in present-day Japan still remains at a low level. This situation has been recognized as a serious problem which Japan must address with urgency. In order to succeed in recovering self-sufficiency in the future, we need to grasp more exactly the demand for efficient food production. Unfortunately, there are certain social impediments to enlarging food production, such as the distance involved with accepting employment in agricultural production by the younger generation, consumer distrust regarding the quality and the soundness of food and food production due to the moral decline of farmers or sales agents, and the inefficiency of the food supply due to a mismatch between the supply from farmers and the demand of consumers. These problems are caused by a lack of communication between the members of the food supply chain, and are induced by the separation of customers from farmers. It is clear, therefore, that a higher level of food production would require the remedying of this lack of communication. In the present paper, I propose a social system for food self-sufficiency based on the collaboration of consumers and farmers. The system would enable consumers to monitor food production by means of closer communication, instead of the ordinary situation of a food supply chain in which products and information flow in only one direction, namely, from farmers to consumers. Firstly, I study an information platform for the system as a regional community. Next, I design an efficient procedure for cross communication, referring to the concept of Concurrent Engineering. Additionally, I propose a virtual facing method for this system which would enable farmers, sales agents, and consumers to obtain the various kinds of available information and to hold discussions together. Suggestions would surely flow from such a process, and would lead not only to a flexible supply chain in which a higher possibility for the response to consumer demands would be developed, but also to an information collecting/analyzing system. As a result, this system for future food self-sufficiency could be expected to resolve misunderstandings between consumers and farmers, and would enable consumers to monitor food production and to be involved with the establishment of requirements through the creation of sound and high-quality food products. To ensure the practicability of the system, I have studied the collaboration in a certain city community, and propose a model for urban self-sufficiency as a concrete sample of the system. In addition, I take environmental preservation into account, namely, I have examined the environmental friendliness and the sustainability of the system. In particular, considerations given to the efficient use of energy in greenhouses have resulted in the suggestion that future greenhouses be run mainly with natural energy sources. In conclusion, I propose measures to enhance consumer awareness, in terms of the topic of food self-sufficiency, and to develop a sufficient amount of high-quality food by means of sound food production in order to better the presently existing situation in Japan.