Risk and The Economics of Acid Chemical Use in Korean Laver Farming

Park, Seong Kwae

I. Introduction

To understand laver culture farmers willingness to adopt chemicals in place of environmentally sound laver culture technologies, it must be recognized that laver culture farmers are economic decision makers in the complex, uncertain environment within which they must operate. In general, laver culture farmers face two types of risks: price risk and yield (or quality) risk.1) Price variability is beyond their control

---

1) Risk and uncertainty classification of Wald (1947) is more sound in sequential analysis than Knights (1964). Wald risk is a situation in which specifications for a kind of
but its uncertainty can be reduced or eliminated if contracting with processors can be made before starting production, while yield and quality risks can be reduced in part by growers production strategies. Thus, an important part of the decision problem facing them is to choose an efficient and safe weed control strategy and other production inputs to deal with these production risks.

When we define ecological laver culture system as the setting up and maintaining of a self-sustaining, environmentally and economically acceptable system, which integrates many forms of culture ground use (Martha 1987), inorganic chemical use (i.e., hydrochloric acid: HLC) in culture fisheries (i.e., laver culture) may have been the good, the bad, and the uncertain. By all accounts, laver culture productivity increased significantly in the last half century largely due to the introduction of new technologies and recently expanded use of chemicals such as HCL. More recently, however, some laver culture practices, including increased chemical use, are viewed as having a major impact on the lager ocean ecosystem and as being an important source of coastal environmental point/non point pollution which it is believed places serious stress on the ocean environment. A recent notification of the Ministry of Maritime Affairs and Fisheries for encouraging organic acid use instead of HCL and the associated guideline of the Korean Fisheries Cooperative Federation reveal serious public concern about laver culture ground contamination by the HCL use. It is also questioned whether the high rates of productivity growth that have characterized modern laver culture can be sustained with such technologies that disrupt the ocean ecosystem. While there is no doubt that laver culture does affect the ocean biosphere, it is not clear how these effects should be valued and traded-off with other social objectives.

The overall concern regarding the possibility of long-term improvements in both ocean environmental quality and laver culture productivity has led to heightened interest in research that incorporate ocean environmental impacts into evaluation of the social benefits and social costs of laver culture technologies and policies.

This paper is organized as follows. The second section includes a discussion of the laver culture technology and yield probability distribution. The third section presents knowledge for a given decision have been met. Uncertainty has to be divided into two parts, i.e., (i) a learning situation in which the specifications are not met but in which it pays to meet them and (ii) situations in which it does not pay to try to meet the specifications. The latter case includes cases for which neither information acquisition nor decision takes place as well as situations in which outside circumstances force decisions. In this study, concepts of risk and uncertainty are used interchangeably.