Impact of climate change on food security in Malaysia: economic and policy adjustments for rice industry

ABSTRACT

Rice paddies production in Malaysia, as in other parts of the world, is extremely vulnerable to weather changes and extreme conditions such as drought and flooding. Such situations forced Malaysia to maintain a protectionist regime with respect to its rice industry to better ensure food security for the country. In this study, a crop simulation model (DSSAT) and system dynamics approach were used to assess the impact of climate change on future rice production, self-sufficiency level of rice, and farmersô gross income in Malaysia. Results from the DSSAT model show that during the main and off growing seasons, increase in temperature and changes rainfall pattern can be expected to reduce the rice yield by 12 and 31.3%, respectively, until the year 2030. Based on the system dynamicsô results, the reduction in rice yield was expected to reduce farmersô gross income and the rice self-sufficiency level of the country. The study suggested two different policy scenarios to overcome these adverse effects. The overall policy implication is that the Malaysian rice industry cannot be sustained if government takes no action to change its current policies.

Keyword: Climate change; Farmers' income; Food security; Policy analysis; Self sufficiency level