ABSTRACT

Indonesia is known as an agricultural country that relies heavily on the agricultural sector as its main source of livelihood and driver of economic development. However, in West Java Province, agricultural soil fertility has decreased significantly due to unsustainable agricultural practices, such as excessive use of chemical fertilizers and lack of crop rotation. This decrease in soil fertility is a serious problem because it inhibits the soil's ability to support plant growth, which ultimately has an impact on low agricultural productivity. This study aims to overcome this problem by developing a soil fertility reporting application based on the Geographical Information System (GIS). This application is designed to map and monitor soil fertility conditions in real-time, so that it can help farmers, extension workers, and the government in making more effective and efficient decisions related to agricultural land management.

The development of this application was carried out using the Extreme Programming (XP) method, which allows for continuous iteration and rapid response to changes in user needs. This application was tested through several testing methods, including Black Box Testing, Load Testing, and User Acceptance Testing (UAT), to ensure that the application functions according to user needs and is able to handle the expected workload. The results of the study showed that this application is effective in providing soil fertility information accurately and efficiently. This application not only supports sustainable agricultural practices but also has the potential to increase land productivity and assist the government in managing agricultural resources in West Java Province.

Keywords: Agriculture, Soil Fertility, Geographical Information System (GIS), Extreme Programming (XP), Application Testing