ANALYSIS OF DIVERSITY AND ABUNDANCE OF INSECTS AS NATURAL FISH FOOD IN THE INTEGRATION OF "MINAPADI" CULTIVATION SYSTEM AND PEST CONTROL TO SUPPORT FOOD SECURITY

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ABSTRACT

Catfish (Clarias batrachus) is a type of freshwater fish that is widely consumed by Indonesian people. So far, there has been a lot of research on minapadi cultivation systems, but no quantitative analysis has ever been carried out on the effectiveness of the abundance and diversity of insect pests in the rice field ecosystem in replacing the role of pelleted feed. In terms of rice productivity, it has never been studied whether the minapadi cultivation system with catfish polyculture is effective in biologically controlling rice pests and can replace the role of other pest control technologies. Therefore, this research was carried out with the aim of; (1) calculate the potential abundance and diversity of insect pests in the rice field ecosystem as a natural food source for catfish cultivated in polyculture using the minapadi system; (2) analyze the effectiveness of the potential natural food for insect pests in the rice field ecosystem as a complement to pelleted food to increase the productivity of polyculture cultivation in the minapadi system; and (3) analyze the effectiveness of the minapadi system in controlling insect pest populations and find out whether it can replace the role of other pest control technologies. This research is experimental research in the field. The study location is in the rice fields of Donotiro Village, Kapanewon Kretek, Bantul Regency, D.I. Yogyakarta. Research stages include activities; (1) land preparation and creation of research layouts in the field; (2) spreading catfish seeds into each pond; (3) installing insect traps above the treatment pond; (4) providing fish food in fish ponds; (5) maintenance of rice plantations which is handed over to farmers and without the application of insecticides to control insect pests (6) sampling the abundance and diversity of insect pests in the rice field ecosystem once a week; (7) catfish harvesting is carried out in stages, starting from 2.5 months to 3 months after stocking; (8) rice harvesting is carried out by farmers as usual; and (9) analysis of insect pest population data and their average daily potential as a source of fish food, as well as calculating the productivity of each treatment pond, then the results are compared between treatments and the best results are sought. Rice yields were compared between treatments to analyze the potential of the minapadi system in biologically controlling rice pests. This research is in line with the Research Grants EQUITY research theme related to indicators in the SDGs, namely SDG 2 without hunger, with indicators of eliminating hunger, achieving food security and good nutrition, and improving sustainable agriculture. Apart from that, this research can support the Empowering green leaders criteria in UIGM rankings, because this research can foster a perspective of social and environmental justice and support for the environment. This research has not been completed because the fish rearing process is still ongoing even though the rice plants have been harvested. However, based on the data that has been obtained, a temporary conclusion can be drawn, namely that the fish pond treatment with light traps produces better performance of rice plants and fish than other treatments. The diversity of pests is also the highest, indicating that there is no dominating species which indicates the stability of the ecosystem, although the difference test is not statistically significant.

Kata Kunci: Insect; natural_food; catfish; "minapadi"