

EFFECTIVENESS OF SPICES TO CONTROL RICE WEEVIL, *Sitophilus oryzae* L. IN STORED RICE GRAINS.

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ABSTRACT

EFFECTIVENESS OF SPICES TO CONTROL RICE WEEVIL, *Sitophilus oryzae* L. IN STORED RICE GRAINS.

In rice industry, there are a lot of problems in maintaining the rice grain in long period of time. One of problem is infestation by insect pest which can reduce the quality of rice grain. Insect is small organism, but it has ability to damage the rice grain in widely infestation while it also effects farmers' loss in their production. Insecticide is usually use among farmers to control population insect in rice stored-grain. But it gives bad effect to consumer when the application of insecticide is overdose and residual effect left on rice grain. The main purpose of this experiment is to examine the plant product (spices) powder to control *Sitophilus oryzae*. Spice from aromatic plant which contain phytochemical has the ability to enhance mortality rate of this *Sitophilus oryzae*. The spice stuff that use in this experiment were *Cinnamomum verum*, dried *Capsicum annum*, *Curcuma longa L*, and *Cymbopogon citratus*. Aromatic powder has been tested on *Sitophilus oryzae* with different concentration and mortality has been recorded for every 24 hours within 2 weeks. Then, determination the amount of treatment residue towards rice and hedonic test for identify the total acceptance also been tested. The results showed that there were 3g *Curcuma longa L*, 4g *Cinnamomum verum* + 3g *Curcuma longa* and 4g of *Cinnamomum verum* + 5g *Curcuma longa* had been recorded caused 100% mortality rate of *Sitophilus oryzae*. Hence, the best concentration was 4g *Cinnamomum verum* added with 5g *Curcuma longa L* which higher mortality rate within 96 hours until the end. In different aspect of study, the resulted shows that the treatment by *Cymbopogon citratus* helped to retain antioxidant in rice while the hedonic test shows there are not significance difference between the treatment which P-value ($P > 0.05$). The aroma that produce from *Curcuma longa* powder which contain Cucurminoids (Curcumin) had better competency in reduce population of *Sitophilus oryzae* in rice grain and contribute with several compounds that have in *Curcuma longa* which have high bioactive element where, it influences primary compound to produce toxicity odour towards the pest. This combination spices are able to solve farmer's problem to protect the rice and exposed them to implement Integrated Pest Management (IPM) as the best system to control insect. Besides, it has ability to maintain the quality of grain in rice stored-grain without harmful to consumer.

Keywords: Rice, Insecticide, *Sitophilus oryzae*, Spice, Mortality rate, Residue and Hedonic test.