I. INTRODUCTION

I. Overview

Vitamin E was previously known as a fat-soluble vitamin potentially preventing rats from reproductive failures. Subsequently, several studies found that vitamin E deficiency in various animal species is associated with many physiological, disorders for example; embryopathy, testticular, atrophy, myopathy, encephalomalacia, mulbery heart disease and muscular dystrophy (Barker *et al.*, 1982). Those disorders showed evidences of cell injuries, the destruction of cell membrane. And their lipid-bilayers were also affected. So vitamin E was defined as a "biological antioxidant".

During the two last decades, vitamin E has been reported as having immuno-stimulating effects relating to disease resistance in a variety of animal species (Nockels, 1987 and Tengerdy, 1990). Not only do the vitamin E deficiencies decrease the immune response but also the pharmacological doses increase the immune functions. Beside, stressed animals tend to require extraordinary amount of vitamin E (Nockels, 1990). However, the direct mechanisms with which vitamin E regulates the immune systems are unclear. Whether high levels of vitamin E supplementation have additive benefit on healthy animals is widely discussed (Herbert, 1994). The role of vitamin E on immunity may simply explain that it protects immune cells against naturally harmful substances occurring during immune response processes. This seems to be the reason why vitamin E improves immunity. But many studies show varied results so it is difficult to specify the consistent effects. It may be that various factors

influence the immune response and other vitamins and minerals involve antioxidant systems. (Meydani, 1993)

Swine production in Thailand has developed to be more of an industry and has also become an important agricultural business. Technology and knowledge are used to improve the productivity. But pig's health and epidemic diseases are still the potential problems on farms. Weaning is especially a critical period of pig production cycles, because weaned pigs are under many kind of stress leading to poor health and susceptibility to infection. As mentioned on the roles of vitamin E, dietary vitamin supplementation become an interesting nutritional strategy to modulate immune systems. And nutrient requirement should be considered to improve not only growth performance but also animal's health and immunity in the future. Besides, the reduction of antibiotics and drugs on pig farm is a further benefit. Therefore this study aimed to investigate an additive effect of higher dietary vitamin E supplementation on both humoral and cellular immune response of weaned pigs under commercial farm conditions. The second objective, four levels of vitamin E ranging in recommendation of weaned pig ration was studied to evaluate the optimal level which improve pig immune response and growth performances.