CHAPTER 1
INTRODUCTION

A. Background

Rice (*Oryza sativa*) is among the three most important grain crops in the world, and it has a major contribution to fulfill the food needs across the globe (Chauhan, Jabran and Mahajan, 2017). A half of the world's population consumes rice as a staple food (Nandan *et al.*, 2018). Rice cultivation in puddled soil with manual transplanting is a common practice in the South Asian countries. The reported from FAO (2013) show that rice is grown over an area of about 163 million hectares in around 111 countries in the world; amounting to an annual production of more than 730 million tons. And it is over 90 % of the world's rice which is produced and consumed at the Asia-Pacific Region.

Particularly in Viet Nam, rice is an important staple food and export all over the world. According to Quang Hieu (2017), Viet Nam is a country which the cultivated surface of rice is the sixth in the world with rice producing is 77.6 million ha and export rice all over the world that value is achieved 2 billion USD every years. In 2017, Viet Nam produced 5.52 million tons equivalent 2.49 billion USD (Quang Hieu, 2017). Specially, Mekong Delta religion where is the largest of rice production in the Southern of Vietnam; which the most produce of varieties rice is routine planting such as OM 5451, OM 4900, Jasmine, OM6976, OM 9677, etc; these kind of varieties are famous with the high yield.

Besides that, different with Vietnam Indonesia is the importer rice from others country and rice also is politically strategic commodity in Indonesia and the government seeks to ensure that rice production most the needs if domestic consumption is accordingly is interested for its performance in accordingly for its performance and in accordance with several determining factors. The reported from FAO (2018) estimates of the 2017 harvest in Indonesia have been lowered by 330.000 tons to 7.9 millions tons. Therefore, in 2018 the anticipation of increasing imports rice for the second successive year to 23.0 million tons in Asian countries and to compares in 2017 estimate of 22.4 millions tons, which is much of the project expansion expected to concentrate in Indonesia (FAO 2018). However, in recent years total rice consumption has been rising faster than production, as the growth rate of national rice areas and yield has flattered. Thus, these increases would more than compensate for cuts in other traditional importers, namely in Indonesia (FAO, 2018). Productivity is related to be finding now high fielding rice varieties that potentially increase the yield per ha, stabilizing rice field by better management to prevent or to control pest and disease incidence, and post harvested; also the varieties rice. The efficiency of those methods for increasing rice production differ from one region to another region which this depends on the natural also social-economic conditions and also depend on which the kind of varieties; which the regularly of varieties (Indonesia) use such as Cisoka, IR – 64, Cre kuning, Cere unggul, etc.

From a lot of study before, weed is as old as agriculture, and from the very beginning farmers realized that the weed interference with crop production (Kabir Khan *et al.*, 2017; Ghersa *et al.*, 2000); it is the greatest yield-limiting constraint to rice (Chauhan and Johnson

2011) such as *Cyperus iria*, *Echinochloa colonum*, *Echinochloa cussgalli*, *Jussiaea octovalvis, ect*; which *Jussiaea octovalvis* is a primary weed in the rice field and also is the broadleaved weed. The reason why weed make rice yield loss cause weeds compete with rice plants severely for space, nutrients, air, water and light and thus adversely affecting growth and yield of rice (Singh *et al.*, 2007).

From the others researcher, Ramzan (2003) showed in his study that weed could reduce rice yield up to 48, 53 and 74% in transplanted, direct seeded flooded and direct seeded, respectively. Beside that in tropical area, the average of rice yield losses from weeds is 35% (Oerke and Dehne, 2004). Sunil *et al.* (2010) research showed that season-long weed competition in rice cause of yield reduction up to 80%. On the other hand, reported from Jayadeva *et al.* 2011 that complete failure of crops due to weeds in rice.

There are a lot of key factors to solve the problem of weed losses in rice yield such as tillage, plant spacing, herbicide, handed weeded etc. Besides that, varieties rice is also one of factors that affect on weed competition with rice; the research from Moody and De Detta (1998) showed yield loss due to weeds depends upon some variables like magnitude of weed infestation, type of weed species and weed interference period with crop. The effect of weed competition can be assessed by observing plant growth and yield reduction (Riya et al. 2017).

However, effect of weeding regime on growth and yield performance of rice depends on many factors including growing season, weed pressure, competitiveness of variety, planting density, agronomic management and so on (Juraimi et al., 2013). Therefore, it is very important to identify proper weeding regime for effective and economic weed management.

The object of this investigation was to determined the effect of competition from various population densities of *Jussiacea octovalvis* on the growth and yield of several introduced Vietnamese rice varieties rice.

Based on these issues, the research was conducted on *"The Effect Of Jussiaea octovalvis* Weed Densities On The Growth And Yield Of Several Inttroduced Vietnam Rice (*Oryza sativa*) In Green House Condition In Padang, Indonesia".

B. Problem of study

Examine about ability of growth of 4 Vietnamese rice varieties (OM 5451, OM 4900, jasmine and Cisokan) on condition of five *Jussiaea octovalvis* weed densities.

Examine about the effect of weed densities on yield of four rice varieties.

C. Objective of study

The main of the research is to investigate the interaction between rice variety (OM 5451, OM 4900, jasmine) from Vietnam and one local variety rice in Indonesia (Cisokan) and *Jussieae octovalvis* weed densities impact on the growth and yield of rice.

Adaptability of three Vietnamese Varieties (OM 5451, OM 4900, jasmine) was growing under condition in Padang, Indonesia.

Investigation which is the level of *Jussiaea octovalvis* weeds densities impact on growth and yield of rice.

D. Benefit of research

Found out Vietnamese rice variety which can be growth with weather condition in Padang, Indonesia and different weed density.