

SUMMARY

Didha Dewani. 0810483007. The influence of planting system with enriched granule compost fertilizer to decrease inorganic fertilizer dosage on the growth and the yield of paddy (*Oryza sativa* L.). Under the guide of Dr. Ir. Titin Sumarni, MS as the supervisor and Dr. Ir. Mudji Santoso, MS as co supervisor.

Paddy (*Oryza sativa* L.) is the most widely grown crop cultivated by society in the world because it yielded rice as the most consumed staple foods in the world, includes Indonesia. The demand on rice would increase year by year in line with the increment on the number of population in Indonesia. In the last decades, the use of inorganic fertilizer and other manufactured input tends to increase significantly. Many efforts taken to decrease the use of inorganic fertilizer continuously, it is by using organic fertilizer. Yet, there is fact that the use of organic fertilizer is not enough for the need of plants nutrients. So, there is need an addition of organic fertilizer. The combination of organic fertilizer and inorganic fertilizer had been conducted by farmer. Organic-inorganic fertilizer is the mixture between organic and inorganic fertilizer (chemistry). We have to begin to popularize using the mixture of organic-inorganic fertilizer because the increment on fertilizer price and its pollution caused by excessive chemistry fertilizer usage. Enriched granule compost fertilizer is organic fertilizer that has been enriched with synthetic NPK fertilizer or NPK fertilizer enriched with organic fertilizer. Term of *jajar legowo* comes from Javanese language – Banyumas consist of the word *lego* that means wide and *dowo* that means long, so that *legowo* has the same meaning with wide and long. The formation of a wide and long overlay caused by the utilization of plants within 2 rows of plants makes the number of per unit plants is more than the conventional planting model (Suriapermana, 1995). Not only the use of appropriate space planting, the increment of paddy yields also supported by many factors, one of it is ground condition factor. In principal plant can grow, bloom, and produce well if the supporting growth factors are not in limited condition, whether in the supply of nutrition or space. If the supply of nutrition in the ground is limited, the final yield (crop) would be low. However, if supply level of nutrition is enough, the competition level can be minimized and the yield per unit land and time are expected to be increased. Purposes to conduct this study are (1) to study the interaction between space planting and the application of inorganic fertilizer combined with enriched granule fertilizer on the productivity of paddy (*Oryza sativa* L.) Ciherang variety and (2) to study the use of enriched granule fertilizer can decrease the use of inorganic fertilizer on the growth and the yield of paddy (*Oryza sativa* L.) production. Presented hypothesis is (1) the use of *tandur jajar* planting system 25 x 25 cm and the increment of inorganic fertilizer dosage can show the optimum yield on paddy (*Oryza sativa* L.) production in the field and (2) the use of enriched granule fertilizer can decrease the use of inorganic fertilizer on the growth and paddy (*Oryza sativa* L.) production.

This research was conducted at the Kepuharjo Village, Karangploso District, Malang. With a height of \pm 540 meters above sea level and temperature of 23-26 0C. The experiment was conducted in March 2012 until August 2012.

The equipment used in this research include hoe, sickle, oven, analytic scales, rope, LAM (Leaf Area Meter), envelope, label, Board, plastic, ruler and tape measure. While the materials used paddy varieties ciherang, urea fertilizer, KCl fertilizer, SP-36 fertilizer, compost granule, granule fertilizers and enriched. The research used split plot design (RPT) which is repeated three times with treatment, main plots, that are the plant spacing (J) : J1 = (tandur jajar)25 x 25 cm and J2 = (jajar legowo) 50 x (25 x 25) cm. Subplot, that are the fertilizer doses (P) : P1 = inorganic fertilizer 100%, P2 = enriched granule (25%) + inorganic fertilizer (75%), P3 = enriched granule (50%) + inorganic fertilizer (50%) and P4 = enriched granule (75%) + inorganic fertilizer (25%). Observation was conducted in destructive by 2 samples of plant for every treatment that is conducted when the plant is in 15, 30, 45, 60, 75, 90 hst and crop. The variabels consist of growth and yield variabels. The growth variables include : (1) Plant height, (2) Number of tiller / clump, (3) Leaf area and (4) Total dry weight of plants. Yield variables include : (1) The grain paddy/clump, (2) The weight of grain paddy/panicle, (3) Percentage of filled grain, (4) The weight of 1000 grains , (5) Dry minced grain paddy weight and (6) The result of grain paddy per hectare. Plant growth analysis include : (1) leaf area index (ILD) and (2) crop grow rate (CGR). Obtained observation data is analyzed by using variety analysis (F test) in the level of $\alpha = 0,05$ to know the influence of treatment. If the yield is real then it would be continued by BNT test on the level of $\alpha = 0,05$ to know the difference between treatments.

The result shows that there is interaction between planting system treatment and giving fertilizing dosage that give influence toward the growth and yield of paddy plant. The interaction occurs on observation parameter of buds number and unhulled rice ton/ha. Dosage decrement of inorganic fertilizing gives the best yield on yield parameter of unhulled rice/ha. Treatment on planting system *tandur jajar* 25 x 25 cm by fertilizing dosage treatment of enriched granule 75% + inorganic fertilizer 25% gives the best yield of 6,76 ton ha⁻¹, the yield is increasing on 17,75% than inorganic fertilizer 100% by yield of 5,56 ton ha⁻¹. The best yield is 6,76 ton ha⁻¹ from enriched granule fertilizing dosage of 75% + inorganic fertilizer 25% that is applied can decrease the use of inorganic fertilizer of 75%. It is suggested to conduct further study on enriched granule compost fertilizer to get suitable dosage on planting paddy so that it can decrease inorganic fertilizer dosage on planting system of *tandur jajar* and *jajar legowo*.