Effectiveness seed age to growth and production (*Oryza sativa* l.) on Hazton system

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**Abstract.** This study aims to determine the effect of seed age on the growth and production of rice in the Hazton system. The study method was arranged based on Plot Design, consisting of 2 treatments and four replications so that eight plots obtained. The result of T-test analysis showed that seed treatment 26 days after distribution gave significant effect to plant height 100.8 cm, the number of tiller 41.45 in each tiller, productive panicle 29.6 panicles, panicle length 25.8 cm, production Weight of dry unhulled rice 8.47 ton/ha and weight of dry milled grain 7.44 ton/ha.

**1. Introduction**

The increase of rice demand in Indonesia is in line with the increasing population increase, but the rate of increase of rice production is not comparable to the rate of population, so the government takes a policy through imports of rice [1,2]. That population growth tends to increase beyond food availability [3]. Seedlings are one of the essential factors in the cultivation of rice crops. Seedlings derived from superior varieties with proper management early on will be able to face obstacles and competition in the field so that it can produce a high production. The age of seedlings influences the quality of planted seeds in the nursery before planting. The use of rice seedlings aged about 30 days will give less good results, because the seedlings are used relatively old so that the slow to adapt to the environment, have the saplings are not uniform, rooting shallow and subsequently Plant growth is less than perfect. While the age of young seedlings are faster to adapt to the environment, forming deeper rooting, so that the plant is more resistant to fall, drought-tolerant, and able to utilize more useful nutrients. The maximum age of seed to be transplanted is crucial with crop growth and production. This research aims to learn the influence of the age of seed transplants and know the age of suitable seed transplants to obtain optimal rice crop productivity. This problem inspires experts to make breakthroughs as an effort to increase rice production.

One of the efforts to achieve the above objectives is through an intensification program by applying the right production technology as well as the use of efficient and profitable production facilities, among them is the technology of life consumption And the number of seeds per clump. Age seeds are one of the factors that determine the quality and ability of seed growth after being moved to the field. Rice paddy planting system to date is generally done by farmers using a moving
planting system (tapin). This system, besides not much, needs special requirements, also not much risk, such as a direct seed planting system or Tabela [4]. Hazton technology rests on the use of old seed age 25-30 days after inculcation seed with a seed amount of 20-30 stems/planting holes. Other components are more or less the same as integrated crop management (PTT), which is recommended by the agricultural research and development agency. Initiation of this technology as one form of participation in order to increase rice productivity in Indonesia [5]. By the explanation then assessed with the title of the effectiveness of seed age to growth and production of rice (Oryza sativa L.) on the Hazton system.

2. Methods

This research held in the village of Desa, Pattallasang subdistrict of Gowa District. The ingredients used in this assessment are seeds of varieties Inpari 31, organic fertilizer (cow dung), inorganic Urea or ZA, NPK Phonska, and pesticides. The equipment used is the rope, meter, hand sprayer, measuring cup, bucket, tarp, mesh cover, wood beam, crescent, plastic, scales, label, hoe, scope, rubber roller, and writing stationery.

3. Result and discussion

3.1. High crop

![Figure 1](image1.png)

**Figure 1.** The result of the average high observation of plants against the two treatments.

The results showed that the aging treatment of the seeds 26 days after the average inculcated seed gave a noticeable effect on the vegetative phase, such as the height of the plant gives the highest yield (100.8 cm) than the treatment 13 days after inculcated seed. It influenced by the system of Hazton, which uses much seed because with the planting of seeds are many chances to be formed little new saplings so focused on growth.

3.2. Number of saplings

![Figure 2](image2.png)

**Figure 2.** The results of the number of saplings against two treatments at the age of 8 weeks after planting.
The results of the standard error analysis showed that the crop height of the 26 HSS treatment is distinct from the treatment of 13 HSS. The results of the study showed the number of saplings, giving the highest yield (41.45 saplings). The transfer of seedlings to the field age seven days after the inculcated seed gets the number of rice crop saplings to reach 20.796 saplings while moving the seedling age 21 days after several saplings only 17.172 saplings. [6] The results of the assessment indicated that in the system age Hazton young seeds have difficulty in competing to produce more saplings because it is planted a lot in every rum have, allegedly because of the competition of fellow rice crops (Inter-species competition) in obtaining water, nutrients, CO2, O2, light, and space to grow [7].

3.3. Number of productive Malai

![Figure 3](image3.png)

**Figure 3.** The observation of the productive amount of the age of 8 weeks after planting the two treatments.

The error standard analysis showed that the number of productive malai in the treatment of 26 HSS is distinct from the treatment of 13 HSS. The use of 26 HSS seeds affects the highest number of productive panicles (33.2 Malai) compared to other treatments.

3.4. Long Malai (CM)

![Figure 4](image4.png)

**Figure 4.** The results of the long-productive observation of the two treatments.

The results of the standard error analysis showed that the length of Malai in the treatment of 26 HSS differs from the treatment of 13 HSS. Long Malai, use of the age of 25 HSS seeds, showed a higher length of malai (26.80 cm) than other treatments.
3.5. Weight of dried grain harvest (gram)

Figure 5. The results of the heavy observation of dried grain harvesting against the two treatments.

The results of the standard error analysis showed that the dry grain weight of the harvest of 26 HSS was distinct from the treatment of 13 HSS. Planting rice paddy crops moved with young seedlings (aged 10-15 HSS), and the number of seedlings less than 5 rods per clump can improve the quality of grain produced [8].

3.6. Heavy dried grain milled (gram)

Figure 6. The result of heavy observation of dried grain milled against two treatments.

Production of dried grain Harvest (GKP), the use of a seed age of 25 HSS gives the result of a higher production average of 52.95 grams or equivalent to 8.47 tons of ha-1 and the production of dried grain milled (GKG), which is higher 46.50 grams or equivalent to 7.44 ton ha-1 Compared to other treatments.

4. Conclusion

Based on the results of the assessment, it can be concluded that the use of the seed age 26 days after the inculcated seed bring more effective results against vegetative growth (plant height 100.8 cm and the number of saplings 41.45) and the production of dried grain harvest 8.47 tons of ha-1 and dried grain milled (7.44 tonnes ha-1).

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