DOI :https://doi.org/10.36378/juatika.v6i2.3602
JUATIKA
JURNAL AGRONOMI TANAMAN TROPIKA
VOL. 6 NO. 2 May 2024
eissn 2656-1727
pissn 2684-785X
Hal : 337 – 347

Physiological Response and Yield Components of Local Aceh Types of Rice (*Oryza sativa* L.) Due to Nitrogen Fertilizer Application

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ABSTRACT

Efforts to preserve Aceh's local rice germplasm include testing the character of local rice lines by providing urea fertilizer. The research aims to determine the effect of local Acehnese rice lines and urea (N) fertilizer on physiological characteristics and yield. The research was conducted in Bangka Jaya Village, Dewantara District, North Aceh Regency and the Agroecotechnology Laboratory, Faculty of Agriculture, Malikussaleh University, April-August 2021. The research used a 2-Factor Randomized Block Design. The first factor of rice lines consists of six lines, namely Sigupai abdya, Sikuneng, Keumala, Manyam RO, Cbd08 and Siputeh. The second factor of urea fertilizer (N) consists of N1 = 200 kg/ha and N2 = 100 kg/ha. The parameters tested were flowering age, leaf area, net assimilation rate (LAB), relative growth rate (LTR), leaf chlorophyll content, shoot-root-ratio, number of panicles, weight of 1000 seeds and grain yield tons/ha. The results showed that the CBD08 rice type had the best influence on the parameters of faster flowering age, leaf area at age (40, 60 DAP and harvest age), net assimilation rate (LAB), shoot root ratio at age (60-40 DAP), number of panicles, weight 1000 seeds and grain yield tons/ha. Urea fertilizer at a dose of 200 kg/ha gave the best growth results in observing leaf area at age (40, 60 HST and harvest age), net assimilation rate (LAB), relative growth rate (LTR I) and LTR II, shoot root ratio, number of panicles. There isinteraction of leaf area, Net Assimilation Rate (LAB I and LAB II),Relative Growth Rate(LTR I and LTRII),*Shoot-Root-Ratio*,Number of Panicles.

Keywords: *Rice Strains, Local Aceh, Urea Fertilizer, Characteristics, Assimilation Rate*

1. INTRODUCTION

Rice is the main food crop commodity in Indonesia, because most of the Indonesian population's staple food is rice. The demand for rice continues to increase along with the increase in population, and changes in staple food patterns in certain areas from tubers to rice. National rice production in 2022 will reach 54.75 million tons, while for 2021 it will reach 54.42 million tons. There was an increase in production of 333.68 thousand tons or 0.61 percent, but for the province of Aceh, rice production reached 1.53 million tons or experienced a decrease of 101.5 thousand tons (6.21%) compared to rice production in 2021 which reached 1.63 million tons. (BPS, 2022). Local Acehnese varieties have the advantage of adapting well to certain locations and have naturally proven their resistance to various environmental pressures as well as pests and diseases compared to superior varieties (Darmadi & Mirza, 2013).

One of the Sikuneng varieties has several advantages, including having high yield and adaptability, but having a long lifespan of 4.5 months and having a high plant height, so the plants fall easily (Efendi et al., 2012).

To increase rice production and productivity, one thing that must be considered is soil fertility, namely by fertilizing. Fertilization is one of the determining factors for increasing food crop productivity (Ishfaq et al., 2023). Fertilizers are divided into sources of micro nutrients and macro nutrients. Macro nutrients are nutrients that plants need in large quantities, such as nitrogen (N), phosphorus (P), potassium (K), magnesium (Mg), calcium (Ca), and sulfur (S) (Nadeem and Farooq, 2019). Nitrogen (N) is the most important nutrient, and plants require higher levels of N compared to other nutrients (Chairunnisak et al., 2018; Mujahid et al., 2023). A lack of N will cause plants not to grow optimally, while excess N can cause disruption to plant growth and pollution of the environment (Elhanafi et al., 2019). Therefore, giving the right N dose to rice plants is very necessary. Research results of Nazirah and Damanik (2015),The growth and yield of upland rice plants was obtained when fertilized with a dose of N 150 kg/ha (P2) and the lowest at 0 kg/ha (without fertilization) giving the highest dry grain production.

The research results of Anhar et al. (2016), showed that from the various doses of Urea fertilizer that were tried it turned out that the best number of tillers at the age of 45 and 60 HST was found at a dose of 0.65 g of Urea fertilizer per pot (200 kg ha¯1), this means that the application of urea fertilizer 200 kg ha¯1) has been able to increase the growth of rice plants. Nurmayulis et al. (2011) also stated that applying 200 kg ha¯1 of Urea fertilizer or the equivalent of 92 kg N was able to increase plant height, number of tillers and rice production. The research results of Dahono et al. (2007) showed that a urea fertilizer dose of 100 kg/ha was able to provide the highest number of tillers compared to other doses.

Based on the description above thenThe responses to the physiological characteristics and yields of several local Acehnese rice varieties were obtained as a result of nitrogen fertilizer application.

2. MATERIALS AND METHODS

Time and Place

This research was carried out in Bangka Jaya Village, Dewantara District, North Aceh Regency, and the Agroecotechnology Laboratory, Faculty of Agriculture, Malikussaleh University at an altitude of 11 meters above sea level. The research was carried out from April to July 2022.

Tools and Materials

The materials used are manure, urea fertilizer (N, 46%), P (SP-36), K (KCL), polybag 40 x 50 cm, anthracol fungicide, envelopes, label paper, plastic and rice seeds.Tools used are hoes, machetes,

meters, sacks, buckets,oven, digital scales, ruler, hose, bucket, camera, chlorophyll meter and stationery.

Research Methods

This research uses a factorial method with two treatment factors, namely type of rice (P) and urea fertilizer (N). Factor 1:P1 (Sigupay Abdya), P2 (Sikuneng), P3 (Keumala) P4 (Manyam Ro), P5 (Cbd-08), P6 (Siputeh).Factor 2 Urea Fertilizer: N1 (200 kg/ha),N2 (100 kg/ha).So there were 12 treatment combinations with three replications. Data analysis was carried out using ANOVA, which was then continued with the Duncan test at a real level of 0.05. Statistical data testing used SAS V9.12 software.

Research Implementation

Seed Preparation

The seeds used in this research are varietal seedsSigupai Abdya, Sikuneng, Siputeh, Manyam RO, Keumala and CBD 08. To choose good seeds, the rice seeds must first be soaked in water. Empty seeds will float, while good seeds will sink to the bottom. The floating seeds are discarded, then the seeds that sink are used as the main seeds and soaked for 24 hours. Next, the seeds are placed in a sack and kept in the germination process for 48 hours until the seeds grow.

Nursery

The germinated seeds are sown in the prepared seedbed. Seed sowing is done one day after the seedbed is made or the sprouts are 2 days old by sowing them in the seedbed.

Planting and Watering

Rice planting is carried out in polybags measuring 40 x 50 cm and filled with 10 kg of soil. After the seeds are 15 days old, they are moved to a planting location that is ready to be processed. Seedlings are planted in one cluster in the planting hole and the distance between polybags is 10 x 10 cm. At the time of planting, the soil conditions varied depending on the treatment. Waterlogging is maintained according to the treatment from planting time until two weeks before harvest.

Fertilization

Urea fertilization was carried out in accordance with the research treatment, namely at a dose of 200 kg/ha (1 gram/polybag) and a dose of 100 kg/ha (0.5 gram/polybag). Fertilization is carried out in 2 stages, namely½parts at the time of planting, and½ part at the age of 30 HST..

Maintenance

1.Watering is done twice a day, namely in the morning and evening, but if it rains, no watering is done

1. Replanting of seeds that do not grow is carried out at the age of 10 HST.
2. Weeding is done manually according to conditions in the field.
3. Pest and disease control is carried out by manually picking off pests that land on rice plants and then throwing them away

Harvest

The age of rice harvest depends on the type of rice based on harvest criteria. Signs that a rice plant is ready to be harvested is when it is physiologically mature with its morphological characteristics, namely the flag leaves have turned yellow, the panicles are drooping, the grain is completely filled, and the rice grains have turned yellow simultaneously, and the seeds are hard. In this research, harvesting was done manually, namely by using a sickle.

Observation variables

Parameters consistflowering age, leaf area, net assimilation rate (LAB), relative growth rate (LTR), leaf chlorophyll content, shoot-root-ratio, number of panicles, weight of 1000 seeds and grain yield tons/ha.

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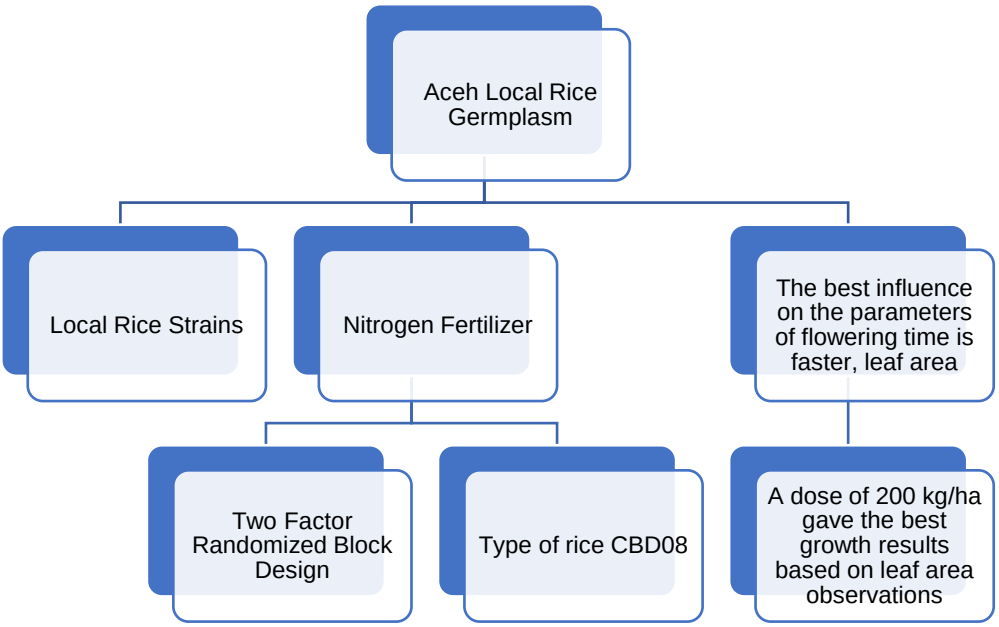

Figure 3. Research Flow Diagrams

3. RESULTS AND DISCUSSION

Flowering Age

The results of the analysis of variance show that there is a significant effect on the treatment of local Acehnese rice types (P) due to the application of urea fertilizer (N).to flowering age 50%,presented in Table 1.

Table 1. Average flowering age of rice plants due to treatment with local Acehnese rice types (P) and urea fertilizer (N)

Treatment	Flowering Age 50% (day)
Type of Rice (P)	
P1 (Sigupai Abdya)	90.16 a
P2 (Sikuneng)	92.44 a
P3 (Keumala)	not flowering
P4 (Manyam RO)	not flowering
P5 (Cbd-08)	84.10 b
P6 (Siputeh)	82.94 b
Urea Fertilizer (N)	
N1 (200 kg/ha)	58.46 a
N2 (100kg/ha)	58.08 a

Note: Numbers given the same letter in the same column are not significantly different based on the DMRT test at the 0.05 level. (-)= not flowering

Based on table 1, it can be seen that the type of rice treatment and urea fertilizer in each treatment had a real influence. In the single treatment type of rice, the highest value was found in P2 (Sikuneng Rice), namely92.44, while the lowest was in treatments P3 (Padi Keumala) and P4 (Padi Manyam RO), namely 0.00. in the single treatment of urea fertilizer, the highest value was N1 (200 kg/ha), namely 58.46.

Leaf Area and Net Assimilation Rate (LAB)

The results of the analysis of variance showed that the treatment of local rice types (P) and urea fertilizer (N) had a very significant effect on the net assimilation rate 1 and 2 at 40, 60 DAP and harvest age,listed in Table 2.

Table 2.Average Leaf Areaage 40.60 HST and harvest ageas well asNet Assimilation Rate1 and 2onTreatment of local Acehnese Rice Types (P) and Urea Fertilizer (N

Treatment	Leaf Area			LAB	
	40 HST	60 HST	Harvest	LAB 1	LAB 2
Type of Rice (P)					
P1 (Sigupai Abdya)	69.83 c	80.83 c	88.91 b	20.50 a	11.51 d
P2 (Sikuneng)	88.50 a	97.66 a	106.00 a	21.16 a	18.60 a
P3 (Keumala)	81.33 b	86.50 b	90.50 b	10.16 b	14.00 b
P4 (Manyam RO)	81.33 b	86.41 b	91.50 b	10.83 b	13.33 BC
P5 (Cbd-08)	69.41 c	74.33 c	79.41 c	7.94 c	10.00 d
P6 (Siputeh)	69.08 c	73.83 c	80. 58 c	10.00 b	12.33 b
Urea Fertilizer (N)					
N1 (200 kg/ha)	72.80 b	78.75 b	84.61 b	10.81 b	11.73 b
N2 (100kg/ha)	80.31 a	87.77 a	94.31 a	16.05 a	14.86 a

Note: Numbers given the same letter in the same column are not significantly different based on the DMRT test at the 0.05 level.

Table 2 shows that the type of rice treatment and urea fertilizer in each treatment have a significant effect. In the rice type treatment, the highest value was at 40.60 DAT and the harvest age was at P2 (Sikuneng), namely 88.50, 97.66 and 106.00, while the lowest was P6 (Siputeh), namely 69.08, 73.83 and 80.58. The highest value of urea fertilizer treatment was N2 (100 kg/ha) with values of 80.31, 87.77 and 94.31. The LAB 1 and LAB 2 parameters on the treatment of rice types and urea fertilizer had a significant effect. The highest values for LAB I and LAB II were P2 (Sikuneng), namely 21.16 and 18.60, while the lowest were P5 (Cbd-08), namely 7.94 and 10.00. In the urea fertilizer treatment, the highest values were found in N2 (100 kg/ha), namely 16.05 and 14.82.

The interaction between rice type treatment and urea fertilizer on leaf area and LAB1 and LAB2 is in Table 3.

Table.3 Interaction Between Treatment of Local Aceh Rice Types (P) and Urea Fertilizer (N) for Rice Plants on Leaf Area 40 DAT and Net Assimilation Rates 1 and 2

Treatment	Leaf Area	Net Assimilation Rate (LAB)	
	40 HST	LAB 1	LAB 2
P1N1	71.33 cde	11.00 de	12.00 def
P1N2	68.33 de	30.00 a	10.83 fg
P2N1	79.33 bc	18.00	13.20 cde
P2N2	97.66 a	24.33	24.00 a
P3N1	76.66 cds	8.66 fg	12.66 cdef
P3N2	86.00 b	11.66 d	15.33 b
P4N1	76.16 cde	10.33 de	12.00 edf
P4N2	86.50 b	11.33 d	14.66 bc
P5N1	66.66 e	7.21 g	9.00 g
P5N2	72.16 cd	8.66 fg	11.00 efg
P6N1	66.66 e	9.66 eph	11.33 def
P6N2	71.50 CDE	10.33 de	13.33 bcd

Note: Numbers given the same letter in the same column are not significantly different based on the DMRT test at the 0.05 level.

Table 3 shows that the combination of rice type treatment and urea fertilizer has a significant effect on the leaf area variable, this shows that there is an interaction between the two treatment factors. The highest value of the leaf area parameter is found in P2N2 (Sikuneng-100kg/ha) with a value of 97.66 cm. Meanwhile, the lowest values were found in P5N1 (Cbd-08-100kg/ha)

and P6N1 (Siputeh-100kg/ha), namely 66.66. The highest value of the parameterLAB1 hst at P1N2 (Sigupai Abdya) is 30.00 while (LAB2) at P2N2 (Sikuneng-100kg/ha) is 24.00 while the lowest value is at P5N1 (Cbd-08-200kg/ha) namely 9.00.

Relative Growth Rate (LTR)

The results of the analysis of variance show that there is a real and very significant effect on the treatment of local rice types (P) and urea fertilizer (N) on the relative growth rates of 1 and 2listed in Table 4.

Table 4.Average Relative Growth Rates 1 and 2onTreatment of local Aceh Rice Types (P) and Urea Fertilizer (N)

Treatment	Relative Growth Rate	
	LTR 1	LTR 2
Type of Rice (P)		
P1 (Padi Sigupai Abdya)	39.69 a	42.95 ab
P2 (Sikuneng Rice)	40.21 a	43.28 ab
P3 (Keumala Rice)	34.93 b	38.66 c
P4 (Padi Manyam RO)	36.91 ab	40.69 BC
P5 (Paddy Cbd-08)	38.23 ab	41.87 abc
P6 (Padi Siputeh)	41.12 a	44.97 a
Urea Fertilizer (N)		
N1 (200 kg/ha)	36.53 b	39.96 b
N2 (100kg/ha)	40.50 a	44.18 a

Note: Numbers given the same letter in the same column are not significantly different based on the DMRT test at the 0.05 level.

Table 4 shows that the type of rice treatment and urea fertilizer in each treatment have a significant effect. In the treatment of rice types, the highest value was found inLTRI onP6 (Siputeh) which is 41.12,and P2 (Sikuneng) which is 40.21, and P1 (Sigupai Abdya) which is 39.69.Meanwhile, the lowest was P3 (Keumala) namely 34.93LTRII P6 (Siputeh) is 44.97 while the lowest is P3 (Keumala) namely 38.66. The highest value of urea fertilizer treatment was N2 (100kg/ha), namely 44.18.

Leaf Chlorophyll Content

The results of the analysis of variance showed that there was no significant difference between the type of rice and urea fertilizer on leaf chlorophyll content parameters.Further test resultson the parameters of the chlorophyll content of plant leavespresented in Table 5.

Table 5. Averageleaf chlorophyll content intreatment of local Acehnese rice types (P) and urea fertilizer (N)

Treatment	Leaf Chlorophyll Content
Type of Rice (P)	
P1 (Padi Sigupai Abdya)	14.04 a
P2 (Sikuneng Rice)	14.20 a
P3 (Keumala Rice)	10.39 a
P4 (Padi Manyam RO)	11.35 a
P5 (Paddy Cbd-08)	31.04 a
P6 (Padi Siputeh)	13.38 a
Urea Fertilizer (N)	
N1 (200 kg/ha)	17.64 a
N2 (100kg/ha)	13.82 a

Note: Numbers given the same letter in the same column are not significantly different based on the DMRT test at the 0.05 level

Shoot-Root-Ratio

The results of the analysis of variance show that there is a very significant difference between local Acehnese rice types (P) and urea fertilizer (N) on the parameters*Shoot-Root-Ratio*at the age of 40 AH and not significantly different at 60 AH, presented in Table 6.

Table 6.AverageShoot-Root-Ratio ages 40 and 60 HST onTreatment of local Aceh Rice Types (P) and Urea Fertilizer (N)

Treatment	*Shoot-Root-Ratio*	
	40 HST	60 HST
Type of Rice (P)		
P1 (Sigupai Abdya)	57.75 b	21.66 a
P2 (Sikuneng)	42.12 c	24.77 a
P3 (Keumala)	61.00 b	21.61 a
P4 (Manyam RO)	53.75 b	22.08 a
P5 (Cbd-08)	54.07 b	23.27 a
P6 (Siputeh)	68.88 a	20.26 a
Urea Fertilizer (N)		
N1 (200 kg/ha)	50.17 b	21.05 b
N2 (100kg/ha)	62.35 a	23.47 a

Note: Numbers given the same letter in the same column are not significantly different based on the DMRT test at the 0.05 level.

Table 6 shows that in the rice type treatment the highest value was at age 60- P6 (Siputeh) namely 68.88 while the lowest was P2 (Sikuneng) namely 42.12. In the urea fertilizer treatment, the highest value was N2 (100 kg/ha), namely 62.35. P2 (Sikuneng) is 24.77 while the lowest is P6 (Siputeh) namely 20.26. In the urea fertilizer treatment, the highest value was found in N2 (100kg/ha), namely 23.47.

Number of Panicles and Panicle Length

The results of the analysis of variance showed that the treatment of rice types on the number of productive panicles/tillers was very significantly different. Meanwhile, urea fertilizer also has a very significant effect on the number of productive panicles/tillers, presented in Table 7.

Table 7. Average Number of Panicles and Length of Rice Panicles in the Treatment of Local Aceh Rice Types (P) and Urea Fertilizer (N)

Treatment	Number of productive panicles/tillers	Panicle length
Type of Rice (P)		
P1 (Sigupai)	12.94 a	28.21 a
P2 (Sikuneng)	7.44 b	27.83 a
P3 (Keumala)	0.00	There are no panicles
P4 (Manyam RO)	0.00	There are no panicles
P5 (Cbd-08)	7.38 b	26.58 b
P6 (Siputeh)	7.90 b	27.96 a
Urea Fertilizer (N)		
N1 (200 kg/ha)	6.71 a	19.27 a
N2 (100 kg/ha)	5.17 b	17.59 b

Note: Numbers given the same letter in the same column are not significantly different based on the DMRT test at the 0.05 level. (-) = Not producing

Table 7 shows that the P1 (Sigupai) rice type treatment shows a higher number of productive tillers, namely 12.94, while the P5 (Cbd-08) rice type

treatment shows 7.38 and P2 (Sikuneng), namely 7.44, in the urea fertilizer treatment the number of productive tillers is greater. at N1 (200 kg/ha) compared to N2 (100 kg/ha). The highest panicle length in the rice type treatment P1 (Sigupai) was 28.21 cm, P6 (Siputeh) was 27.96, and P2 (sikuneng) was 27.83. Meanwhile, the rice type treatment with the lowest panicle length was obtained at P5 (Cbd-08), namely 26.58.In the urea fertilizer treatment onpanicle lengthrice plants but statistically the N1 urea fertilizer treatment (200 kg/ha) is the treatment that haspanicle lengthmore, namely when compared with the N2 urea fertilizer treatment (100kg/ha).

Weight of 1000 Grainy Grain Seeds and Grain Yield tonnes/ha

The results of the analysis of variations in the number of grains per hill of rice plants due to treatment had a significant effect on the type of rice treatment and the urea fertilizer treatment. Further test resultsto parameterspercentage of empty grainplants havepresented in Table 8.

Table 8. Average weight of 1000 seeds and grain yield tons/ha of rice when treated with local Acehnese rice types (P) and urea fertilizer (N)

Treatment	Weight of 1000 Seeds	Grain Yield tonnes/ha
Type of Rice (P)		
P1 (Sigupai)	20.23 b	4.21 b
P2 (Sikuneng)	20.86 b	4.15 b
P3 (Keumala)	-	-
P4 (Manyam RO)	-	-
P5 (Cbd-08)	22.15 a	4.42 a
P6 (Siputeh)	20.56 b	4.16 b
Urea Fertilizer (N)		
N1 (200 kg/ha)	13.89 a	2.82 a
N2 (100 kg/ha)	14.04 a	2.82 a

Note: Numbers given the same letter in the same column are not significantly different based on the DMRT test at the 0.05 level. (-) = Not producing

Table 8 shows that the type of rice treatment has a very significant effect on the weight of 1000 seeds, which is the highest obtained in the type of rice treatmentP5 (Cbd-08) is 22.15 while the lowest is P1 (sigupay abdya) which is 20.23.The urea fertilizer treatment did not show a significant difference in the weight of 1000 rice seeds, but statistically the N2 urea fertilizer treatment (100 kg/ha) was a treatment that weighed 1000 seeds more, when compared to the N2 urea fertilizer treatment (100kg/ha).

Based on flowering age parameters, it shows that several local rice types greatly influence the flowering age of rice plants, the plants that flower the fastest are P6 (Sipueth) rice plants, namely 82.94 HST but this is not significantly different from the P5 variety (Cbd-08). Meanwhile, the local rice types that produce flowers the longest are the P3 (Keumala) and P4 (Manyan RO) rice plants. The difference in flower appearance time was caused by differences in the characteristics of the plants tested. Rahmawati in wiwik*et al.*(2013) stated that the differences that occur in several varieties or genotypes are caused by genetics so that they show different ages and this characteristic is a natural characteristic possessed by each genotype which is formed as a result of its adaptation to the environment.

Leaf area is an important component in determining yield because

the wider the leaf, the better the photosynthesis process takes place. Leaf area is a genetically inherited trait, if the environmental conditions where it grows are the same, it will have a relative leaf areauniform for the same variety. Based on observations of the leaf area of the six rice varieties Sigupay Abdya, Sikuneng, Keumala, Manyam RO, Cbd-08, Siputeh, it was found that the P2 variety (Padi Sikuneng) had a real influence on harvest age. This is related to the fact that each variety has a different morphological or physiological system for each. Each variety has a different leaf area. If the photosynthate formed increases, it will be translocated to the vegetative parts of the plant to form new organs (Pramitasari, 2007).

In terms of net assimilation rate, it was found that the highest LAB was obtained at the 60-40 HST age of the P2 (Sikuneng Rice) variety, namely 21.16, while at the harvest age of 60 DAP the P2 (Sikuneng Rice) variety (Sikuneng Rice) was 18.60. This is likely caused by low ILD due to nutrient deficiencies and competition with weeds. The decrease in ILD also occurs due to an increase in leaf area, where increasing leaf area will result in other leaves being shaded, which will interfere with the photosynthesis process. Generally the net assimilation rate (LAB) has the highest value when the plant is still small because most of the leaves are exposed to direct sunlight. In this case, sunlight also plays a role in the assimilation results. The wider the leaves, the more light will be absorbed, the more the plant will assimilate. In line with the research results of Hadirrochmat (2004), the decrease and increase in LAB is related to the development of leaf area and the availability of nutrients that can be absorbed by plants. The net assimilation rate is the accumulation of dry weight per unit leaf area per unit time. The net assimilation rate reflects the average photosynthetic efficiency of leaves. Furthermore, it is said that an increase in the ILD value is not always accompanied by an increase in LAB.

The research results of Lu et al. (2010) added that the effect of plant type on yield is very dependent on the structure of the plant canopy. A high LTR in the early stages of growth will increase source capacity which can meet sink capacity requirements, thus affecting grain yield. Other factors that may influence the relative growth rate are the availability of sufficient nutrients in plants, so the plants become more fertile. Leaves or other plant parts will also develop well, thus greatly influencing the relative growth rate. This is in accordance with the opinion of Leiwakabessy and Sutandi (2004) that the nutrients that have an important role in plant growth and production are N, P, and K. The treatment of urea fertilizer is very different, with increasing plant age, the number of mature leaves will also increase. also.

The root shoot ratio is obtained by comparing the dry weight of the roots and the dry weight of the shoot. If root development is more active than canopy development, large root-top ratio values will be obtained (Suprianto 1998). Increased shoot roots are also common in nutrient deficient conditions (Orcutt and Nilsen, 2000).

Based on observations, the highest number of grains per hill was found in the P5 (Cbd-08) rice type which was very different, the Aceh lokah rice type varied in the number of grains per hill, and also the same with the speed of tiller vigor. Based on observations, the parameters for the number of productive panicles/tillers are very significantly different. Muliasari and Sugiyanta (2009) also stated that the increase in the number of tillers will continue continuously until the number of productive tillers is reached, then some tillers die and the number will decrease until a constant number is reached. Observation of the number of offspring is related to the number of productive

offspring. Based on observations, not all seedlings produce panicles, meaning that not all plant saplings are productive. In this study, the highest tillering of the P1 rice type (Sigupai Abdya) compared to other varieties.

According to Asmanur Jannah*et al.*(2012) The weight of 1000 grains of filled grain indicates the amount of biomass contained in the grain. The more grainy the grain is, the more biomass it contains. Grain health is largely determined by ensuring the availability of nutrients and ensuring the physiological processes of the plant. The more grain that is formed, the higher the burden on the plant to form full (piggy) grain.

4. CONCLUSION

1. The CBD-08 rice type had the best influence on lifespan parameters faster flowering, leaf area at age (40, 60 DAP and harvest age), net assimilation rate (LAB), shoot root ratio at age (60-40 DAP), number of productive panicles/tillers, weight of 1000 grains and ton grain yield /Ha.
2. Urea (N) fertilizer at a dose of 200 kg/ha provides growth results best observed in leaf area at age (40, 60 DAP and harvest age), net assimilation rate (LAB), relative growth rate of LTR 1 and LTR 2, shoot root ratio, number of productive panicles/tillers,
3. There isinteraction of leaf area, Net Assimilation Rate (LAB1 and LAB2),Relative Growth Rate(LTR1 and LTR2),*Shoot-Root-Ratio*,Number of productive panicles/tillers.

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