Assessment of the growth of floating rice lines and resistant to salinity at the seed germination and seedling growth stage

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Abstract. The growth of 11 floating rice lines had already been a selection when affected by salinity stress. The method demonstrates that the amount of NaCl (0, 1, 3, 5 g/l) was irrigated into lines in a plastic round box after seeds were been nurseries on 2 days, where the growth of lines was affected by salt stress during seedling growth and germination. The study illustrated that the stress caused by salinity causes a decrease in all currents development as the salinity level increases between the growth of the currents, the coleoptile length, the number of roots, root length, fresh and dry weights varied downward trends more than 50% and germination percentage created from 96.30% to 92.55%, from zero to 5 g/l NaCl at the seed germination stage. This stage, it is apparent that the CQS28 line was the best coleoptile length (4.21 cm), the number of roots (3.72 roots), root length (12.88 cm), fresh weight (0.92 g/10 seedlings), dry weight (0.13 g/10 seedlings) and germination percentage (98.50%) overall and the CQS44 line was the lowest. These did not change when the effect of saline stress on the growth of lines in both the period was good CQS28 and less CQS44.

1. Introduction
The development of canal systems attracted migrants to exploit land along canals for floating rice cultivation since 1857 in the Mekong Delta [1]. And then, modern rice cultivation started with the introduction of high yielding varieties (such as IR5 and IR8) in 1966 and began overuse chemical fertilizer and pesticides heavily into agricultural production because of high-profit costs [2]. These can cause ecological unbalance, environment pollution and climate change in the Mekong Delta [3]. So that, researchers have studied back in the past to choose clean floating rice varieties which grow organic direction, safe for the environment, sustainable with flooding area and high nutrient of floating rice [4]-[7].

However, stress caused by salt is reported to be a serious problem [8]. The growth of plants at all stages of development will be affected by salty stress [9]. The harmful effects of salt are the result of a combination of both water deficiency and the toxicity of ions [9]. It decreases seed germination percentage and seedling growth [10] and these stages are very sensitive to salt stress and can be used as criteria to filter salt's ability. Therefore, the approaches used to screen plant materials for salt tolerance including the relative growth rate of shoots, roots and survival rate. [11]. This plant growth differently sensitive to salinity stress were exposed to 0, 1, 3 and 5 g/l NaCl solution at the stage of seed germination.
and growth of seedlings. To survey the effects of NaCl in response to 11 floating rice lines. The present study was determined growth parameters.

2. Materials and methods

This research was conducted from December 2017 to April 2018 at the net house of An Giang University, Vietnam. The treatments were completely randomized block design (RCBD) containing two factors. The first factor is 11 floating season rice lines that chose from Cho Moi and Tri Ton district, Vietnam [12] such as CDC, TDC, QS02, QS03, QS04, QS05, QS28, QS33, QS38, QS39, QS44. The second factor is 4 salinity levels NaCl (0, 1, 3 and 5 g/l) and purchased Natri Clorua from China. Both factors were achieved included materials and devices as glass bottles, 68%HNO3, glass petri dish, tissue paper, seed germinator, round plastic box (17x14x11 cm).

The seed is chosen clean, health seed and germination rate above 85%. Hence, grain seeds are soaked with 11 solution (6.3 ml HNO3 99% and 993.7 ml water) in the glass bottles on 24 hours to destroy dormancy. And then, grain seed drops upper tissue paper in the petri dish where is irrigated humid and annealing seeds at 35°C on 24 hours by seed germinator. After that, 50 seeds are dropped above tissue paper into a plastic round box (17x14x11 cm) where is always irrigated the same amount solution containing NaCl (0, 1, 3 and 5 g/l water) follow the layout of treatments during the end of the experiment.

The trial is begun for tracking criteria of 11 floating rice lines on the seed germination stage as well as after 3 days and on the growth of seedlings as well as 6 days. Seed germination percentage (GP) was calculated at the first stage as follows: GP (%) = 100 (GS / TS), of which GS = germinated seeds and TS = total number of seeds are incubation. The number of partial roots (RN) was counted per 10 germinated seeds, sampled at random. The maximum root length per germinating particle is also recorded on the same sample, and the total root length (TRL) is calculated as TRL (cm) = RN x RL, where the number of roots per seed germinates and RN = the number of roots per seed germinating (an average of 10 seeds germinate). Measure the length of coleoptile (cm) (average of 10 sprouted seeds). Fresh weight (g/10 seedlings) was determined per 10 seedlings. Dry weight (g/10 seedlings) was measured after dry at 70°C for 48 hours.

Statistical analysis and graphic were performed using Excel 2010 and Minitab® 19.2020.1 (64-bit). For statistical comparison, two-way ANOVA was used to confirm significant differences. Post-Hoc analysis was performed using the Tukey multiple range test at the 0.05 probability level.

3. Results and discussion

3.1. Seed germination stage

Table 1 illustrates the number of coleoptile length, roots number, fresh weight, dry weight, root length and germination percentage in 11 floating season rice lines at the seed germination stage. All the 11 lines develop well trends in each their tracking criteria at the moment. While the CQS28 line was the highest overall, the row for the CQS44 line was low according to the statistical analysis was determined by the Tukey test at p < 0.05 level. The coleoptile length, roots number, root length, dry weight, fresh weight and germination percentage in the CQS44 line were 2.68 cm, 6.48 cm (no significantly different with CQS04 and CQS33), 2.50 roots (no significantly different with CQS33), 0.66 g/10 seedlings (no significantly different with CQS33, CQS04, CQS03, TDC, CQS39 and CQS05), 0.07 g/10 seedlings and 85.17%, respectively. The amount of determining factors in the CQS28 was 4.21 cm coleoptile length (no significantly different with CQS03), 3.72 roots number (no significantly different with CDC, CQS39, CQS38, CQS02, TDC and CQS05), 12.88 cm root length, 0.92 g/10 seedlings fresh weight (no significantly different with CQS02, CQS38, CQS05, CDC and CQS39), 0.13 g/10 seedlings dry weight (no significantly different with CDC), 98.50% germination percentage (no significantly different with CDC, CQS03, CQS02, CQS04, CQS33, CQS39 and CQS38). These mean values were similar to Adjel et al. [9] point of view who studied Barley genotype is the main factor affecting seed germination, stem length, length and number of roots.
Table 1. Coleoptile length, fresh weight, dry weight, root number, root length and germination percentage mean values [± SD] of floating season rice lines.

| Lines | CL (cm) | RN | RL (cm) | FW (g/10 seedlings) | DW (g/10 seedlings) | GP (%) |
|-------|---------|----|---------|---------------------|---------------------|--------|
| TDC   | 3.63±0.20bc | 3.33±1.88abc | 11.02±9.60b | 0.72±0.30abc | 0.10±0.03bc | 90.33±4.25a |
| CDC   | 3.51±1.29abcd | 3.59±1.33abc | 8.37±5.02cde | 0.77±0.16cde | 0.12±0.03bc | 98.67±1.78a |
| CQS02 | 3.62±1.91bc | 3.50±1.75c-e | 10.20±8.09bc | 0.87±0.32bc | 0.10±0.02bc | 97.33±3.65ab |
| CQS03 | 3.86±2.29ab | 3.20±1.24ab-d | 8.45±6.58cde | 0.71±0.32c-d | 0.12±0.03bc | 98.00±1.91ab |
| CQS04 | 3.05±1.84c-ef | 3.08±1.98cd | 6.78±5.53ef | 0.69±0.22c-d | 0.10±0.04de | 97.33±2.99ab |
| CQS05 | 3.53±1.96abc | 3.31±1.70c-e | 9.28±7.20ab-d | 0.80±0.29c-d | 0.10±0.03bc | 95.33±3.85b |
| CQS28 | 4.21±1.71a | 3.72±1.54a | 12.88±9.01a | 0.92±0.29a | 0.13±0.04a | 98.50±1.24ab |
| CQS33 | 2.66±1.65a | 2.75±1.32ab-d | 7.55±8.87c-e | 0.68±0.25ab-d | 0.09±0.03e | 97.33±2.61ab |
| CQS38 | 3.10±1.70de | 3.53±1.59c-e | 7.91±6.23e-f | 0.85±0.31c-e | 0.12±0.04b-e | 95.83±3.86ab |
| CQS39 | 3.34±1.03c-e | 3.55±1.85ab | 10.61±8.77ab | 0.77±0.22cd | 0.11±0.03e | 96.33±3.17ab |
| CQS44 | 2.68±1.76a | 2.50±1.54ab | 6.48±6.75e | 0.66±0.19ab | 0.07±0.02e | 85.17±6.12d |

CL: Coleoptile length; RN: Roots number; RL: Root length; FW: Fresh weight; DW: Dry weight; GP: Germination percentage. Values followed by the same letter in each column are not significantly different based on testing multiple Tukey ranges at the p<0.05 level.

Nevertheless, salt influences all the measurements indicated by the main effects of salinity significantly. The coleoptile length decreased from 5.39 to 1.17 cm, the number of roots from 4.89 to 1.14 roots per germinated seed, the root length from 18.76 to 1.10 cm, the fresh weight from 0.99 to 0.46 g/10 seedlings, the dry weight from 0.14 to 0.07 g/10 seedlings and the germination percentage from 96.30 to 92.55% as salinity increased from none to 5 g/l NaCl. But the increasing change in the germination percentage at the 3 g/l NaCl was 97.09% due probably to other factors and for statistical analysis means that followed by the same letter does not differ significantly. So that, germination percentage still affected by salinity stress when salinity has upward trends. This result is corroborated by the results of Alam et al. [13] and Khan et al. [14], who reported that tracking factors decreased as salinity increased. This is suitable with table 2 where describes meaning values of tracking criteria and it is been statistical analysis is evident that salinity stress effect on the growth of floating season rice lines at the seed germination stage.

Table 2. Salinity main effects of coleoptile length, roots number, root length, fresh weight, dry weight and germination percentage mean values [± SD].

| NaCl (g/l) | CL (cm) | RN | RL (cm) | FW (g/10 seedlings) | DW (g/10 seedlings) | GP (%) |
|-----------|---------|----|---------|---------------------|---------------------|--------|
| 0         | 5.39±0.72a | 4.89±0.60a | 18.76±3.63a | 0.99±0.20a | 0.14±0.02a | 96.30±5.43a |
| 1         | 4.07±1.27b | 4.24±0.76b | 11.29±5.31b | 0.93±0.20b | 0.12±0.02b | 95.94±5.84a |
| 3         | 2.89±0.72c | 2.84±0.94c | 5.05±2.23c | 0.68±0.14b | 0.09±0.02c | 97.09±2.92a |
| 5         | 1.17±0.38d | 1.14±0.39d | 1.10±0.58d | 0.46±0.11a | 0.07±0.01d | 92.55±4.96b |

CL: Coleoptile length; RN: Roots number; RL: Root length; FW: Fresh weight; DW: Dry weight; GP: Germination percentage. Values followed by the same letter in each column are not significantly different based on testing multiple Tukey ranges at the p<0.05 level.

The salt effect also demonstrates more in table 3 that the significant interaction of the defined criteria indicates that the response of the set of test lines between the test samples of salty stress. At the 0 g/l NaCl, CQS28 lines have similar development of coleoptile length, root number, root length, fresh weight, dry weight and germination percentage probably due to seed quality. As far as Alam et al., [13] are also concerned about the growth of the seed without salt. (none NaCl) and it concerns seed quality. However, when the amount of salinity experienced upward trends most growth of the lines were reduced. As far as Khan et al., [14] can see plants under saline conditions accumulate ions like NaCl.
These concentration ions effect on the metabolic processes when excess plant tolerant [15], disturbs the biosynthesis of photosynthetic pigments and also down-regulates the photosynthetic activities [16]–[19]. For rice plants, salinity is the main cause of the biochemical and physiological changes of the plant, reducing the rapid growth [20] - [29]. Salt also influences plant processes in relation to water [30]. During the initial period of exposure to salinity, plants are under water stress [31], causing the area of photosynthesis available to support growth further decreased [17].

At the highest number of salinity (5 g/l NaCl), coleoptile length, roots number, root length and fresh weight of lines were the same letter and not significantly different according to the Tukey multiple rang test. Rice is a salt-sensitive crop. It is most sensitive to salt at the seedling stage, where the toxicity of salt is lethal, under controlled conditions, from an external concentration of NaCl of only 50 m-3 in more resistant varieties [32]. But these floating season rice lines of Xuân and Phước [12] had selected, they were high sensitive at the 5 g/l NaCl, therefore, all of lines growth affected and no lines were highest and lowest of determining factors at seed germination. Except, dry weight and germination percentage describe the lines were significantly different at the number of highest Natri Clorua. The CQS02 line was highest dry weight (0.09 g/10 seedlings) and not significantly different with CDC, CQS03, CQS04, CQS05 and CQS39. Germination percentage of the CQS28 line was highest (98%) and not significantly different with CDC, CQS04, CQS03, CQS02 and CQS38. The CQS44 line was the lowest dry weight and germination percentage (0.04 g/10 seedlings and 83.33%). Similarly, Khan et al., [14] assume that the accumulation of Na of different types of rice is presented that concentrations of Na increased with increased salinity levels. Differences in lines were also observed in this character. The clearest differences between tolerant and susceptible lines was that tolerant lines in each group generally accumulated lower amounts of Na than the susceptible ones. Therefore, the CQS44 line is highly susceptible and the result is consistent with previous reports that the tolerant line accumulates less Na than the susceptible line [32] - [34] and the susceptible line with a high Na content.

More influence from the effect when excess Na will create toxins that affect the metabolism of plants [15], [34].

3.2. Seedling growth stage
Growth characteristics, in terms of the number of roots, were shown to change significantly when current were exposed to saline stress. The mean values of the number of roots (absolute and relative) of the 11 clones affected by the salinity are shown in Figure 1. The number of roots of all clones decreased as the salinity increased. Salt stress is often associated with osmotic stress and ionic damage [10] and if it is further the effects of high pH stress. High pH media around the roots can directly precipitate Ca2 +, Mg2 + and H2PO4 - and may inhibit uptake [35] and disrupt the ionic homeostasis of plant cells. So the number of roots will be decreased. At none NaCl, the number of the roots of all the lines were not significantly different due to the same letters according to the Tukey test. At 1 g/l NaCl, the CQS05 (6.27 roots) was the highest roots number and not significantly different with CDC, CQS02, TDC, CQS04, CQS28 and CQS03 lines and the number of the roots of CQS39 line (4.90 roots) was the lowest as CQS38, CQS44 and CQS33 lines. Statistically similar highest tolerance was also shown by CQS38 (6.10 roots), CQS39 (5.40 roots) and CQS05 (5.17 roots) at 3 g/l NaCl and CQS44 line (3.00 roots) as CDC, CQS33 and CQS03 were lowest. At the highest amount of NaCl, CDC line (3.23 roots) was highest overall excepting CQS44 line (1.79 roots) was lowest.
Table 3. The interaction between salinity and floating rice lines on coleoptile length, roots number, root length, fresh weight, dry weight and germination percentage.

| NaCl (g/l) | Lines | CL (cm) | RN | RL (cm) | FW (g/10 seedlings) | DW (g/10 seedlings) | GP (%) |
|------------|-------|---------|----|---------|---------------------|---------------------|--------|
| 0          | TDC   | 6.09a   | 5.40d-c | 23.85a | 0.96a-b            | 0.12a-b            | 95.33a-e |
|            | CDC   | 4.18d-f | 4.23c-d | 12.62g-h | 0.78a-k         | 0.14b-e           | 100     |
|            | CQS02 | 5.79b   | 5.43ab  | 21.10ab | 1.14ab           | 0.14b-f           | 100     |
|            | CQS03 | 6.27a   | 4.03e-k | 16.33de | 0.88a-i          | 0.15b-d           | 99.33ab  |
|            | CQS04 | 5.66c-e | 5.30d-f | 15.16d-g | 0.88a-i       | 0.15b             | 98.67c   |
| 0          | CQS05 | 5.50c-e | 4.53b-g | 17.40cd | 1.01a-f         | 0.12e-g          | 96.00c-e |
|            | CQS28 | 5.62c-e | 5.07e-f | 22.73ab | 1.20a           | 0.17a            | 98.00c-e |
|            | CQS33 | 5.36c-f | 4.67c-f | 22.09ab | 1.02c-f        | 0.13d-g          | 98.76c-e |
|            | CQS38 | 5.46c-e | 5.07c-e | 16.45de | 1.12ab          | 0.14b-d         | 92.00f   |
|            | CQS39 | 4.04f-f | 5.80a   | 21.36ab | 1.06e-c        | 0.15bc           | 99.33ab  |
|            | CQS44 | 5.53c-e | 4.30e-i | 17.25cd | 0.83a-j        | 0.09i-m          | 82.00b   |
|            | TDC   | 4.68b-e | 4.50g    | 15.31d-g | 0.98a-g       | 0.13d-g         | 88.67c-h |
|            | CDC   | 4.70b-e | 4.90e-f | 12.84f-h | 0.96a-h       | 0.15b           | 99.33ab  |
|            | CQS02 | 4.68c-e | 4.50g    | 13.33c-e | 1.13b         | 0.10b-i         | 98.00c   |
|            | CQS03 | 5.61c-e | 4.53g    | 12.64d-h | 1.07d-d       | 0.13d-g         | 98.76c-e |
|            | CQS33 | 2.97e-i | 4.40h   | 6.25f   | 0.81a-j       | 0.12d-h         | 96.67c-d |
| 1          | CQS05 | 5.02d-f | 4.97e-f | 14.48d-g | 1.09a-d       | 0.14e-b         | 99.33ab  |
|            | CQS28 | 5.66c-e | 5.00e-f | 19.91bc | 1.11c        | 0.15b           | 99.33ab  |
|            | CQS33 | 1.91c-o | 2.93k-n | 4.36cl | 0.65d-k       | 0.10b-j         | 98.00c-e |
|            | CQS38 | 2.79b-k | 3.23l   | 4.02n   | 0.97a-b       | 0.15b           | 99.33ab  |
|            | CQS39 | 4.15f-f | 4.17j-f | 15.86d-f | 0.71b-k       | 0.12e-g         | 96.00e   |
|            | CQS44 | 2.59d-j | 3.50l-l | 5.24j   | 0.75b-k       | 0.07m-n         | 82.00h   |
|            | TDC   | 2.55i   | 2.57p   | 4.12m   | 0.56g-k       | 0.09i-f         | 91.33c-f |
|            | CDC   | 3.68h   | 3.67l-i | 6.76i   | 0.77a-k       | 0.12i-i         | 98.67c-h |
|            | CQS02 | 3.14f-i | 3.07m-m | 5.63j   | 0.75b-k       | 0.08m-p         | 98.67c-a |
|            | CQS03 | 2.54m   | 2.57p   | 3.78o   | 0.54a-k       | 0.11e-l         | 98.00c   |
|            | CQS04 | 2.82g-k | 2.00m-o | 4.72j   | 0.67c-k       | 0.05n          | 97.33c-d |
| 3          | CQS05 | 2.72b-l | 2.73o   | 4.27j-l | 0.66d-k       | 0.08l-o         | 96.00e   |
|            | CQS28 | 3.86e-g | 3.30l-o | 6.35l   | 0.80a-j       | 0.11g-i         | 98.67c-a |
|            | CQS33 | 1.97n-n | 1.93m-r | 2.58i   | 0.62c-k       | 0.08l-o         | 98.67c-a |
|            | CQS38 | 3.20f-i | 4.57g-g | 10.07h  | 0.74b-k       | 0.12l-h         | 99.33ab  |
|            | CQS39 | 3.47f-i | 3.30l-l | 4.67j   | 0.78a-k       | 0.10k          | 98.00c   |
|            | CQS44 | 1.87b-o | 1.53s   | 2.55j-p | 0.61f-k       | 0.08b         | 93.33c-f |
|            | TDC   | 1.18b-p | 0.87s   | 0.81p   | 0.36b         | 0.06f-r        | 86.00f-h |
|            | CDC   | 1.48m-p | 1.57s-p | 1.26p   | 0.56g-k       | 0.08m-p        | 96.67d    |
|            | CQS02 | 0.90p-p | 1.00s-p | 0.72p   | 0.45k         | 0.09k-n        | 92.67c-f |
|            | CQS03 | 1.03p-p | 1.67o-s | 1.06m-p | 0.35s        | 0.07m-q        | 96.00e   |
|            | CQS04 | 0.76p   | 0.63s   | 0.98p   | 0.42j-k       | 0.07n-q        | 96.67d    |
| 5          | CQS05 | 0.88p-p | 1.00s-p | 0.99p   | 0.44j-k       | 0.07m-q        | 90.00g    |
|            | CQS28 | 1.68l-p | 1.50s-s | 2.54i-p | 0.55g-k       | 0.07m-q        | 98.00c-e  |
|            | CQS33 | 1.41l-p | 1.47h-s | 1.18p   | 0.41j        | 0.06o-r        | 94.00e    |
|            | CQS38 | 0.95p-p | 1.23t-p | 1.10m-p | 0.56k        | 0.06e         | 92.67c-f |
|            | CQS39 | 1.71l-p | 0.93s-s | 0.56p   | 0.53h-k       | 0.07m-q        | 92.00f    |
|            | CQS44 | 0.90p-p | 0.67s   | 0.86p   | 0.43j         | 0.04         | 83.33g    |

CL: Coleoptile length; RN: Root number; RL: Roots length; FW: Fresh weight; DW: Dry weight; GP: Germination percentage. Values followed by the same letter in each column are not significantly different based on testing multiple Tukey ranges at the p<0.05 level.
The effect of different levels of salinity on mean values of root length of 11 floating season rice lines is presented in Figure 2. Currents had a higher difference when not under stress and decreased with salinity treatment. The CQS38 (26.64 cm), CQS33 (26.37 cm), CQS02 (23.98 cm), CQS39 (23.72 cm), TDC (23.05 cm), CQS28 (22.66 cm), CQS05 (21.57 cm), CDC (20.41 cm) and CQS04 (29.25 cm) lines exhibit a high root length in the absence of salinity, but they lose this ability when subjected to high saline pressure, where the CQS02 line (2.68 cm) showed the lowest root length with all of the lines at the highest number of NaCl. This is a distinction of Reza [30] noting that salinity stress increases root length. This may reflect maintenance or even induction of root elongation at a low water position, which could be considered a salinity adaptive response [36]. The increased root length is likely due to redistribution of photosynthesis into the roots, rather than buds, thereby reducing shoot development. While an increase in root growth to increase water inflow is often noted as a general response to salinity, empirical evidence suggests that decreased root growth and increased shoot growth may improve. Improves salinity tolerance by limiting the influx of toxic ions to the shoot and thereby delaying the onset of tolerance threshold [37]. In the other hand, these result corroborated those of Adjel et al., [9], Munns [38] and Munns et al., [39], people reported that the root length decreased as salinity increased. Excessive salt intake into plant tissue damages the cells, leading to decreased growth rates [40], [41], through the effect of ionic excess. [10]. The decreased root length due to the salt-specific and ion-excess effect of salinity was the main cause of the root length reduction.
Figure 2. Effect of NaCl on the root length (RL) of floating season rice lines. The results are presented as mean values ± SE. Values followed by the same letter in each column are not significantly different based on testing multiple Tukey ranges at the p<0.05 level.

Figure 3. Effect of NaCl on the fresh (FW) and dry weights (DW) of floating season rice lines. The results are presented as mean values ± SE. Values followed by the same letter in each column are not significantly different based on testing multiple Tukey ranges at the p<0.05 level.

Salinity also reduces both fresh and dry weight of the wet season rice lines (Figure 3). The mean of the highest fresh weight was CQS05 (2.09 g/10 seedlings) and CQS28 (1.99 g/10 seedlings) lines and the highest dry weight was CQS39 (0.22 g/10 seedlings), CQS05 (0.21 g/10 seedlings) and CQS28 (0.20 g/seedlings) under the supply of 0 g/l NaCl treatment method, showing a complete decrease in the state due to the influence of salts. The reduction in freshness and dry weights varied among lines in response to salinity from zero to 5 g/l NaCl treatments. At 5 g/l NaCl, the lowest fresh weight was CDC (0.67 g/10 seedlings), CQS04 (0.70 g/10 seedlings), TDC (0.75 g/10 seedlings) and CQS44 (0.76 g/10 seedlings) and the lowest dry weight was CQS33 (0.10 g/10 seedlings) and CQS44 (0.12 g/10 seedlings), respectively. This is the same result of Adjel et al., [9] that the sensitivity/resistance of test lines differs...
between measurable characteristics and differences between resistant and sensitive lines have been observed for this characteristic in high salt concentrations. In addition, the results were consistent with El-Hendawy et al. [42], who showed that fresh and dry weights decreased in varieties as salinity increased.

4. Conclusions
Coleoptile length, number of roots, root length, fresh and dry weights of CQS28 line were the best overall and at the germination percentage of CQS28 line still was high according to Anova testing at the seed germination stage. However, the impact of the amount of salt increased from zero to 5 g/l NaCl as well as all of the tracking criteria on the growth of floating season rice lines decreased. It is clear more than CQS28 line was high determining factors of all lines under zero NaCl and CQS44 line was low under the supply of 5 g/l NaCl when seeing was general in both stages.

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