**Effect of Transplanting Dates on Yield and its Related Traits in Rice** (*Oryza sativa* L.)

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**Abstract:** Study envisaged that early planted (May,16) rice taken greater days to heading (110.4 days), maturity (136.0 days) and plant height (102.25 cm). However, number of panicles/hill (19.75), grains/panicle (109), grain weight/hill (79.13 g), 1000 grain weight (36.10 g) and grain yield (5750 kg ha\(^{-1}\)) were significantly greater in 1\(^{st}\) June planted rice. Thus, it is recommended that transplanting during the first week of June is ideal for achieving maximum grain yield.

**Key words:** Rice-Transplanting Dates-Yield and Growth

**Introduction**

Rice (*Oryza sativa* Linn) is one of the most important cereal crop in the world. It is also one of the principal food grains and staple diet of majority of the people in Pakistan. It is major commodity which is exported and contributes approximately 15% of the total foreign exchange earnings (Mallah, 1987). In Pakistan rice is grown on an area of about 2300 thousand hectares with a total annual production of 4584 thousand tons. However, in Sindh province the area under rice crop is about 690 thousand hectare with an annual production of 2123 thousand tons (Anonymous, 2000). Yield obtained at present is low as compared to other rice growing countries like Philippines, China, Thailand and Burma in the world. This might be lack of improved production technologies. Among various package of production technologies transplanting dates play a pivotal role in the development of rice crop. Jiang and Zhou (1987) conducted pot trials in 1986 transplanting dates play a pivotal role in the development of rice crop. Jiang and Zhou (1987) conducted pot trials in 1986 and planted rice on 5\(^{th}\), 15\(^{th}\) or 25\(^{th}\) July, revealed that sowing of rice on 25\(^{th}\) July was more conductive to produce better yield as compared to planting dates of 5\(^{th}\) and 15\(^{th}\) July. However, Patel et al. (1987) conducted field experiments during 1981-83, where rice seeds were sown between 1\(^{st}\) November and 15\(^{th}\) December and the seedlings transplanted after 45, 55 or 65 days. Grain yield ranged from 3.3 t ha\(^{-1}\) with 65 day old transplants from seeds sown on 15\(^{th}\) December to 6.2 t ha\(^{-1}\) with sowing on 30\(^{th}\) November and transplanting after 55 days. Generally, early sowing dates gave higher yields with older seedling transplants and late sowings gave higher yields with younger seedlings. Kim et al., (1991) conducted field trials on transplanting rice on 10\(^{th}\), 20\(^{th}\) or 30\(^{th}\) May and 10\(^{th}\), 20\(^{th}\) June. They observed higher yields when younger seedlings were transplanted 45 days after transplanting. However, further delay in transplanting resulted in shorter days to flowering, crop maturity and taller plants. Patel et al. (1991) reported that rice cv. Donghaebyeo sown on 10\(^{th}\), 20\(^{th}\) and 30\(^{th}\) May, and 10\(^{th}\) and 20\(^{th}\) June gave grain yields of 4.52, 4.67, 4.57, 4.49 and 4.03 t ha\(^{-1}\), respectively, and 1000 grain weight of 20.5, 19.8, 20.3, 20.5 and 21.4 gram. Thus, present study was undertaken to evaluate the effect of different sowing dates on the growth and yield of rice in the agro-ecological conditions of Thatta, Pakistan for achieving higher yields and self-sufficiency in paddy production.

**Materials and Methods**

Experiment was conducted during Kharif season of 1998, to study the effect of different transplanting dates on the growth and yield of rice variety DR-92, in the experimental area of Rice Research Station Thatta. The experiment was laid out in Randomized Complete Block Design (RCBD) with four replications having a net plot size of 4 x 4 m\(^2\). Twenty two day old seedlings of rice variety DR-92 were transplanted on 16\(^{th}\) May, 23\(^{rd}\) May and 1\(^{st}\) June in a row and plant distance of 20 x 20 cm. A Basal fertilizer dose of 40-50-50 NPK kg ha\(^{-1}\) was applied prior to transplanting in the well puddled soil in the form of Urea, DAP and SOP respectively. While rest of nitrogen (80 kg ha\(^{-1}\)) was split and top dressed at the time of various crop developmental stages. Zn as Zinc Sulphate was applied at the rate of 15 kg ha\(^{-1}\) to make the crop more vigorous.

**Results and Discussion**

**Growth Parameters:** Rice transplanted on May, 16\(^{th}\) resulted prolonged days to flower, crop maturity and taller plants. However, further delay in transplanting resulted in shorter

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<th>Table 1: Growth and yield components of rice variety DR-92 as affected by different transplanting dates</th>
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<td>days to flowering</td>
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<td>16(^{th}) May</td>
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<td>23rd May</td>
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<td>1(^{st}) June</td>
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Values followed by similar letter, are not significantly different at p<0.05 % level
days to flower, crop maturity and plant height. This might be
due to sufficient time to crop stay in the field which facilitated
the plants to improve the photosynthesis activities which in
turn caused longer days to flower and maturity and taller
plants. However, number of panicles/hill and grains/hill were
superior in case of later (1st June) transplanted crop. While
early transplanted rice produced lesser panicles/hill and
grains/panicle. This may be due to availability of favourable
temperature during panicle and grain initiation period in
1st June transplanted crop. Similar results have also been
reported by (Jiang and Zhou, 1987).

Yield and yield components: Rice transplanted on June 1st
caused higher grain weight, seed index and grain yield,
whereas, early transplanted crop produced lower seed weight
and seed index which in turn caused poor grain yield. These
results are supported by the finding of Lee et al. (1991) and
Patel et al. (1987).

It may be inferred from the present findings that June 1st
was the ideal transplanting time for growing rice crop in Thatta
area. Early or intermediate planted crop took greater flowering
and maturity days also produced taller plant. While later
planted crop produced more number of panicles/hill,
grains/panicle, grain weight/hill, and seed index which resulted
in greater grain yield. This demonstrates that June planted
crop achieve favourable temperature for photosynthesis
activity in contrast to the early sown rice crop. The greater
photosynthesis activity resulting in bolder and heavier seed
which is an assurance of more grain yield (Table 1).

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of seeding date and seedling age on dry season yield.