

Optimum Transplanting Time of Each Ecotype According to Rice Machine Transplanting at the Reclaimed Saline Land in Southwestern

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Objectives

This study was conducted to establish the optimum transplanting time of each ecotype for producing good quality rice at the reclaimed saline land in southwestern

Materials and Methods

- Testing varieties : Samcheonbyeo(Early Maturity), Hwaseonbyeo(Mid Maturity), Nampyeongbyeo(Mid-Late Maturity)
- Testing soil and soil salinity : Fine sand loam(Munpo series), 0.1 ~ 0.2%
- Transplanting date : May 20, May 30, June 9, June 19
- Transplanting Space : 30×12cm
- Fertilization rate(N-P₂O₅-K₂O) : 20-5.1-5.7 kg/10a
 - N split application(Basal fertilizer-Top dressing at tillering stage-Maximum tillering stage-fertilization at panicle initiation stage-Top dressing at ripening stage)
 - = 30:20:20:20:10%

Results

1. No. of spikelet per the unit area is higher at transplanting on May 20 than those of the other transplanting time. when Samcheonbyeo were transplanted early, the ripened grain rate is high. but, Hwaseongbyeo and Nampyeongbyeo don't differ among transplanting time.
2. The milled and head rice yield(MHRY) is high by transplanting Samcheonbyeo on May 20 ~ 30, Hwaseongbyeo and Nampyeongbyeo on May 20 ~ June 9. the MHRY was higher in the order of Hwaseongbyeo, Samcheonbyeo and Nampyeongbyeo
3. There isn't the difference of amylose and protein content among transplanting time and varieties. but, palatability value is low at early transplanting(May 20).
4. Consequently, as considering the rice growth, the rice good quality, the yield of milled and head rice, It is proper that Samcheonbyeo was transplanted on May 20 ~ 30, Hwaseongbyeo and Nampyeongbyeo were transplanted May 20 ~ June 9.

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Table 1. Accumulative temperatures and harvesting time by transplanting date and ecotype of rice at the reclaimed saline land in southwestern

| Trans-planting date | Ripening temperature(°C) | | | | | | Harvesting time ²⁾ | | |
|---------------------|--------------------------|-----------|------------|--------------------|-----------|------------|-------------------------------|-----------|------------|
| | Accumulative | | | Mean ¹⁾ | | | Sam-cheon | Hwa-seong | Namp-yeong |
| | Sam-cheon | Hwa-seong | Namp-yeong | Sam-cheon | Hwa-seong | Namp-yeong | | | |
| May 20 | 998 | 956 | 910 | 25.0 | 23.9 | 22.8 | 46 | 49 | 51 |
| May 30 | 971 | 928 | 887 | 24.3 | 23.2 | 22.2 | 47 | 50 | 53 |
| June 9 | 941 | 890 | 854 | 23.5 | 22.3 | 21.4 | 48 | 53 | 55 |
| June 19 | 888 | 858 | 808 | 22.2 | 21.5 | 20.2 | 51 | 55 | 60 |
| Mean | 950 | 908 | 865 | 23.8 | 22.7 | 21.7 | 48 | 52 | 55 |

1) during 40 days after heading.

2) days required to reach 1,100°C of accumulative temperature after heading (days after heading).

Table 2. Yield components by transplanting date and ecotype of rice at the reclaimed saline land in southwestern

| Trans-planting date | No. of panicle per m ² | | | No. of spikelet/m ² (×1,000) | | | Ripened grain rate | | | 1,000 grain weight(%) | | |
|---------------------|-----------------------------------|-----------|------------|---|-----------|------------|--------------------|-----------|------------|-----------------------|-----------|------------|
| | Sam-cheon | Hwa-seong | Namp-yeong | Sam-cheon | Hwa-seong | Namp-yeong | Sam-cheon | Hwa-seong | Namp-yeong | Sam-cheon | Hwa-seong | Namp-yeong |
| May 20 | 470 | 441 | 450 | 36.3 | 32.0 | 35.5 | 77a | 84 | 82 | 20.8 | 21.9 | 20.6 |
| May 30 | 445 | 441 | 415 | 34.3 | 31.3 | 33.0 | 77a | 81 | 81 | 20.7 | 21.6 | 20.7 |
| June 9 | 422 | 425 | 396 | 33.2 | 29.4 | 31.4 | 75ab | 84 | 83 | 20.7 | 21.5 | 20.9 |
| June 19 | 416 | 401 | 360 | 32.8 | 27.5 | 28.7 | 73b | 86 | 80 | 20.5 | 21.7 | 20.7 |
| Mean | 438 | 427 | 405 | 34.2 | 30.1 | 32.2 | 76 | 84 | 82 | 20.7 | 21.7 | 20.7 |

Table 3. Heading date, yield of milled and head rice by transplanting date and ecotype of rice at the reclaimed saline land in southwestern

| Trans-planting date | Heading date | | | Yield of milled rice(kg/10a) | | | Yield of head rice(kg/10a) | | |
|---------------------|--------------|-----------|------------|------------------------------|-----------|------------|----------------------------|-----------|------------|
| | Sam-cheon | Hwa-seong | Namp-yeong | Sam-cheon | Hwa-seong | Namp-yeong | Sam-cheon | Hwa-seong | Namp-yeong |
| May 20 | 7.26 | 8.5 | 8.14 | 525a | 515a | 533a | 432a | 447a | 478ab |
| May 30 | 8.2 | 8.11 | 8.19 | 513b | 494ab | 532a | 417b | 422b | 484a |
| June 9 | 8.9 | 8.18 | 8.24 | 498c | 489b | 511b | 401bc | 422b | 462b |
| June 19 | 8.19 | 8.24 | 8.30 | 490c | 474c | 481c | 387c | 408c | 421c |
| Mean | 8.7 | 8.15 | 8.22 | 507 | 493 | 514 | 409 | 425 | 46 |

* Means with the same letter in a column are not significantly different at the 5% level by Duncan's multiple range test.

Table 4. Variations of head rice and grain quality by transplanting date and ecotype in the reclaimed saline land in southwestern

| Trans-planting date | Head rice(%) | | | Protein content(%) | | | Palatability value | | |
|---------------------|--------------|-----------|------------|--------------------|-----------|------------|--------------------|-----------|------------|
| | Sam-cheon | Hwa-seong | Namp-yeong | Sam-cheon | Hwa-seong | Namp-yeong | Sam-cheon | Hwa-seong | Namp-yeong |
| May 20 | 81.4 | 86.3 | 89.3 | 8.8 | 8.9 | 8.9 | 53 | 62 | 67 |
| May 30 | 81.3 | 85.4 | 90.8 | 8.9 | 9.0 | 9.0 | 57 | 66 | 72 |
| June 9 | 80.1 | 86.1 | 90.3 | 8.9 | 9.3 | 8.9 | 61 | 67 | 72 |
| June 19 | 78.7 | 86.2 | 87.7 | 8.9 | 9.1b | 9.1 | 61 | 66 | 68 |
| Mean | 80.4 | 85.9 | 89.5 | 8.9 | 9.1 | 9.0 | 58 | 65 | 70 |