

Study on Predicting the Rice Growth Duration Using Thermo Unit Accumulation¹

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Summary

In order to realize the possibility of predicting the rice growth duration by using thermo unit accumulation, the field experiments were conducted by three rice cultivars TNG 67, TCS 10 and TC 190 in four transplanting dates at two locations in 1989. The thermo models were the growing degree days (GDD) and modified growing degree days (MGDD). The GDD for a given day is defined as average of daily maximum and minimum temperature minus a base temperature. MGDD is the same equation as GDD but with a threshold of 30 imposed on maximum temperature. The base temperature for germination of each genotype were got by segmented regression which modified the simple linear regression, and determined as x-intercept from regression the rate of germination (i.e., the reciprocal of the number of days required to germinate) vs. the temperature. The base temperature of TNG 67, TCS 10 and TC 190 are 12.26, 7.07 and 9.8, respectively.

Results indicated that the thermo unit models using the GDD and MGDD were more accurate than using calendar days for predicting all rice growth stage except the reproductive stage. The MGDD accumulation index for rice growth and development at different growth seasons and locations was more stable than GDD.

{Key word: Rice (*Oryza sativa* L.), Thermo unit, Heat unit, Growing degree days.}

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