

ABSTRACT

Photoperiod-sensitive genic male sterile (PGMS) rice lines are male sterile in long day-light length and revert to fertile under short day-light length growth conditions. On the other hand Thermosensitive genic male sterile (TGMS) rice lines are male sterile under high temperature and revert to fertility under low temperature growth conditions. In sterile conditions these rice lines are pollinated with fertile pollen to produce hybrid seeds. The challenges in using the PGMS and TGMS in the tropics is that, day-light length is only 12hours and cannot induce sterility in PGMS, while temperature, in most places, is not high enough to completely induce sterility in TGMS. The objective of this work is to induce complete sterility in PGMS/TGMS by increasing the daylight length to 14hours using solar energy lighting system and by raising temperature to above 36°C and 20°C day and night time respectively. Hypothesis to be tested is that lengthening the day light to 14hours using solar lighting system and raising the Temperature (within greenhouse) induce complete sterility in PGMS and TGMS rice lines. All Materials (PGMS and TGMS) rice lines were obtained from International Rice Research Institute (IRRI) and sown in concrete troughs in greenhouse at KARI Mwea- Kimbimbi station. At premordial stage, PGMS and TGMS were given long-day length treatment by extending daylight using solar lighting system. Temperature was raised above normal-day-temperature by sowing plants in greenhouse conditions.