

ASSESSING THE COMBINATION ABILITY OF NEW CYTOPLASMIC MALE STERILE AND RESTORER LINES FOR DEVELOPING THREE - LINE HYBRID RICE

Le Van Thanh, Nguyen Thi Tram, Nguyen Van Muoi,
Vu Van Quang, Pham Thi Ngoc Yen, Nguyen Trong Tu

Summary

The experiment was evaluated the developmental growth and some agronomic traits of four cytoplasmic male sterile lines (CMS), of which three new CMS lines were 12A, 13A, 14A and imported II-32A line with eight restorer lines (R) such as R13, R16, R17, R18, R20, R253, R998 and R838 in the summer season of 2016. The sowing to flowering time of new CMS lines is from 98 to 105 days, 14 leaves per main stem, dwarf height, typical pollen sterility 100%. Crossed this parental lines to collect F1 hybrid rice seed (on A-line plant). We had gotten 32 F1 hybrid rice combinations (F1) with Nhi uu 838 (II-32A / R838) as the control varieties. Evaluation of some agronomic traits, components of yield, actual yield and quality traits of 32 F1 in the spring crop, selected 8/32 F1 of which the actual yield is higher than the control varieties Nhi uu 838 from 3.9 to 16.2%. Individually, the 14A line had two F1 hybrid rice combinations with significantly higher yields than the control varieties at $P = 99\%$ included 14A/R13 (87.5 quintals per hectare) and 14A/R20 (86,2 quintals per hectare). Evaluation of hybridization of parental lines, the results showed that four restorer lines as R13, R16, R17, R998 and 14A line (CMS) had the highest general combination ability value in elements of productivity trait and productivity trait. In actual yields trait, the 14A line also was high separate combination ability with 4/8 restorer lines, namely R13, R20, R998 and R838 at statistically significant levels.

Keywords: *Cytoplasmic male sterile lines, general combination ability, separate combination ability, three-line hybrid rice.*