

TO DEVELOP SUPER RICE HYBRID STUDIES ON COMBINING ABILITY OF NPT LINES OF RICE (*ORYZA SATIVA* L.)

Shivam Soni, Deepak Sharma and Harish Kumar Netam

Deptt. of Genetics & Plant Breeding and Deptt. of Entomology,
Indira Gandhi Krishi Vishwavidyalaya, Raipur, 492006, Chhattisgarh
(Email: - shivamigkv@gmail.com / shivamigkv@yahoo.com)

Abstract : Combining ability in NPT lines of rice for Super hybrid rice breeding programme has been carried out in line x tester mating design involving 3 stable CMS lines and well adapted 9 testers of different eco-geographic origin in rice. It revealed presence of predominance of non additive gene action for the characters under study. Among the lines IR 79156A was identified as a good general combiner followed by APMS 6A and IR58025A and within the tester ET 1-13, IRFAN-115, and ET 1-12, was found to be good combiner for grain yield per plant. Promising hybrids based on *per se* performance, SCA, GCA and Heterosis for grain yield per plant are IR79156A/ET-1-10, APMS6A/ET1-12, IR58025A/IRFAN-115, IR79156A/ET-1-1 and IR79156A /TOX 981-11-2-3. These promising hybrids offer greater scope for further exploitation of hybrid vigour commercially.

Keywords : New plant type, Hybrid rice, CMS, Combining ability

REFERENCES

- Bobby TPM and Nadarjan, N.** (1994). Heterosis and combining ability in rice hybrids involving CMS lines. *Oryza* **31**:5-8
- Gannamani, N.** (2001). Study of heterosis and combining ability by utilizing cytoplasmic genetic male sterility and fertility restoration system in rice (*Oryza sativa* L.). M.Sc. (Ag.) Thesis, IGKV, Raipur.
- Jayasudha, S. and Sharma, Deepak** (2009). Combining ability and gene action analysis for yield and its components in rice (*Oryza sativa* L.). *Journal of Rice Research*, **2**(7).
- Kemphorne, O.** (1957). An introduction to Genetic Statistics. John Wiley and Sons Inc., New York.
- Khush, G.S.** (1995). Breaking the yield frontier of rice. *Geo-Journal* **35**: 329–332.
- Kumar,P.S. and Ram, S.R.R.** (2006). Combining ability studies in rice (*Oryza sativa* L.). *Research on Crops*. **7**(3): 720-722
- Li-yun, C., Ying-hui, X., Wen-bang,T. and Dong-yang, L.** (2007). Practices and prospects of super hybrid rice breeding. *Rice Science*, **14**:71-77
- Manonmani, S. and Ranganathan, R.B.** (1998). Genetic analysis in early lines of indica rice. *Oryza*, **35**(4): 358-360.
- Manuel, W.W. and Palanisamy, S.** (1989). Line x tester analysis of combining ability in rice. *Oryza*. **26**(1):27-32.
- Munhot, M.K., Sarawgi, A.K. and Rastogi, N.K.** (2000). Gene action and combining ability for yield, grain quality and other related characters in rice. *Oryza*, **37**(1): 1-6.
- Peng, J.Y. and Virmani, S.S.** (1990). Combining ability for yield and yield related traits in relation to breeding in rice (*Oryza sativa* L.). *Oryza*, **27**: 1-10
- Ramalingam J, Vivekanandan, P and Vanniarajan C.** (1993). Combining ability analysis in lowland early rice. *Crop research* **6** : 228-233
- Ramalingam, J., Nadarjan, N., Vanniarajan, C., and Rangaswamy P.** (1997). Combining ability studies involving CMS line in rice. *Oryza* **34**:4-7
- Rao, S. and Kulkarni, N.** (2004). Heterosis and gene effects for gain yield in inter sub-specific crosses of rice (*Oryza sativa* L.). Extended Summary
- Sarawgi, A.K., Shrivastava, M.N. and Chowdhary, B.P.** (1991). Partial diallel cross analysis of yield and its related characters in rice (*Oryza sativa* L.) under irrigated and rainfed situations. *Indian Journal of Genetics*, **5**(1): 30-36.
- Shanthi, P., Shanmugasundaram, P. and Nagarajan, P.** (2003). Combining ability analysis in rice. *Oryza*, **40**(1/2): 11-13.
- Sharma, R.K. and Mani, S.C.** (2005). Combining ability and gene action for quality characters in Basmati rice (*Oryza sativa* L.). *Indian Journal of Genetics and Plant Breeding*, **65**(2): 123-124.
- Virmani, S.S. and Edwards, I.B.** (1983). Current status and future prospects for breeding hybrid rice and wheat. *Adv. Agron.*, **36**: 145-219.
- Yadav, S.P. and Murty, B.R.** (1966). Heterosis and combining ability of different height categories in bread wheat. *Indian journal of genetics* . **36**: 184-196