
SHORT SCIENTIFIC NOTES

Computer Program for Conducting Hybrid Analysis from a Line \times Tester Mating System

The line \times tester analysis is basically a type of genetic analysis which tests the combining abilities (general and specific) of a number of given lines in the genetic background of a number of given or proven testers. This type of analysis provides the basic genetic data with reference to the type of gene action involved in controlling a quantitative character and obviously is very much needed in determining the most productive crosses from a number of available crosses in a hybrid breeding program.

Kempthorne (1957) initially developed a statistical procedure for performing combining ability analysis from a line \times tester mating scheme. The analysis partitions the total genotypic variation into variation due to lines, due to testers and that due to the interaction between lines and testers. Further it splits the total genotypic variance into variance due to general combining ability (gca) and that due to specific combining ability (sca). The general combining ability effects of lines and testers and specific combining ability effects of the hybrid combinations are also estimated. This type of information is usually obtained from hand calculators by the students which often poses limitations on the number of crosses to be handled as also the time taken in obtaining the information.

We have developed and documented a computer program which performs the hybrid analysis from a line \times tester mating system for the Indian made T.D.C.-12 computer. The program is written in Fortran 4-K-language and could be utilized for obtaining the relevant information from the above-mentioned computer. It handled 225 F_1 combinations resulting from a 15×15 , line \times tester mating scheme, grown in a randomized block design with 4 replications.

The computer output gives the following informations :

1. Specific combining ability effects of F_1 combinations.
2. General combining ability effects of lines and testers.
3. Analysis of variance table partitioning all the source of variation into components as described by Kempthorne (1957).

4. Analysis of genotypic variance into variance due to general combining ability and variance due to specific combining ability.

Details of the program along with a worked example could be obtained from us.

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Detection of Ragi (*Eleusine coracana*) in Mustard Seeds (*Brassica nigra*)

Due to similarity in physical appearance ragi and Argimone (*Argimone mexicana* Linn.) seeds are used as adulterants in mustard seeds. A method using paper chromatography has been reported for the detection of Argimone seeds in mustard seeds¹. No chemical method is available for the detection of ragi seeds in mustard seeds. The present study describes a chemical method for the detection of ragi in mustard seeds based on our observation that ragi contains amylose which gives blue colour with iodine whereas mustard and Argimone seeds do not.

The test.—Few local varieties of ragi and mustard seeds were purchased from government agencies. Argimone seeds were procured from the Department of Agriculture, Mysore, Bangalore. The seeds were freed from foreign matters, powdered separately in the grinder attachment of waring blender and the fine powder was used for the study. Two grammes of each of the powdered ragi, mustard Argimone and 2 g mustard containing different percentages of ragi were taken in separate test-tubes. The samples were boiled for 5 minutes with 15 ml of water, cooled and filtered. Few drops of iodine