

**A NOTE ON CONSTRUCTION OF TRIANGULAR P.B.I.B. DESIGN**

**WITH PARAMETERS  $v = 21, b = 35, r = 10,$**

**$k = 6, \lambda_1 = 2$  AND  $\lambda_2 = 3$**

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Chang, Liu and Liu (1965) gave 18 sets of unsolved parameter combinations of triangular designs in the range  $r, k \leq 10$ . Out of these 18, the solution for the triangular design with parameters  $v = 21, b = 35, r = 10, k = 6, \lambda_1 = 2$  and  $\lambda_2 = 3$  is obtainable and is given in the present note.

B.I.B. design with parameters  $v = 21, b = 42, r = 12, k = 6$  and  $\lambda = 3$  can be obtained [cf. Raghavarao (1971)] from initial sets  $(0_1, 5_1, 1_2, 4_2, 2_3, 3_3); (0_1, 1_1, 3_1, 0_2, 1_2, 3_2); (0_2, 5_2, 1_3, 4_3, 2_1, 3_1); (0_2, 1_2, 3_2, 0_3, 1_3, 3_3); (0_3, 5_3, 1_1, 4_1, 2_2, 3_2)$  and  $(0_3, 1_3, 3_3, 0_1, 1_1, 3_1)$  by developing modulus in the sense of Bose (1939). The first set when generated gives a triangular P.B.I.B. design with parameters  $v = 21, b = 7, r = 2, k = 6, \lambda_1 = 1, \lambda_2 = 0$  with the following association scheme:

×	$0_1$	$5_1$	$1_2$	$4_2$	$2_3$	$3_3$
$0_1$	×	$6_2$	$2_1$	$5_3$	$3_2$	$4_3$
$5_1$	$6_2$	×	$0_3$	$3_1$	$1_3$	$2_2$
$1_2$	$2_1$	$0_3$	×	$6_3$	$4_1$	$5_2$
$4_2$	$5_3$	$3_1$	$6_3$	×	$0_2$	$1_1$
$2_3$	$3_2$	$1_3$	$4_1$	$0_2$	×	$6_1$
$3_3$	$4_3$	$2_2$	$5_2$	$1_1$	$6_1$	×

Deleting these 7 sets from the 42 sets of the B.I.B. design, we get the triangular P.B.I.B. design with parameters  $v = 21, b = 35, r = 10, k = 6, \lambda_1 = 2$  and  $\lambda_2 = 3$ .

REFERENCES

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