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**GENSTAT PROGRAMS FOR SUMMARY TABLES FROM
RBD AND LATTICE DESIGNS**

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GENSTAT PROGRAMS FOR SUMMARY TABLES FROM RBD AND LATTICE DESIGNS

INTRODUCTION

Data sets from multilocational trials have to be processed as soon after the growing season as possible to allow genotypic assessment over environments. Forming two-way tables with margins for each variable allows this assessment. Since randomized block and lattice designs are often used at ICRISAT Centre and West African centers, programs for these designs have been developed for producing summary tables.

In all programs genotype names and corresponding numbers, yield ranks, percentage of check or percentage of grand mean, standard error, mean and coefficient of variation are presented. The programs also provide means and percentage trial mean with their rankings across all the environments.

All the following programs are available in the sub-directory [BG.MACRO] and it is suggested that scientists wishing to use these programs copy them.

**RANDOMIZED BLOCK DESIGN USING CHECK MEAN FOR
CALCULATING PERCENTAGE OF MEAN**

(RBDCHECK.SUM)

This program is developed for preparing a summary table from a randomized block design. The global identifiers the user has to specify in the program are given below:

NR	SCALAR	No. of replications
NT	SCALAR	No. of treatments
NV	SCALAR	No. of variables
NTEST	SCALAR	No. of test entries
NCHECK	SCALAR	No. of check entries
NCMEAN	SCALAR	Check entry number used for calculating percentage of mean
CENTRY	VARIATE	check entry numbers
TEST	VARIATE	test entry numbers
NN1	NAMES	test entry names
NN2	NAMES	check entry names

RESTRICTIONS: The data for the yield should be the first variable with other characters following.

Example:

```
'REFE'   RBDCHECK
'UNIT'   $ 75
'SCAL'   NR=3: NT=25: NV=3
'SCAL'   NCHECK=4: NTEST=21
'VARI'   CENTRY=20,21,22,25
'TEST'   TEST=1...19,23,24
'NAME'   NN1=A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,W,X
'NAME'   NN2=T,U,V,Y
'INPU'   2
:
r
'CLOSE'
'STOP'
```

**RANDOMIZED BLOCK DESIGN USING GRAND MEAN FOR
CALCULATING PERCENTAGE OF MEAN**

(RBDMEAN.SUM)

This program is developed for preparing a summary table from a randomized block design. The global identifiers the user has to specify in the program are given below:

NR	SCALAR	No. of replications
NT	SCALAR	No. of treatments
NV	SCALAR	No. of variables
NTEST	SCALAR	No. of test entries
NCHECK	SCALAR	No. of check entries
CENTRY	VARIATE	check entry numbers
TEST	VARIATE	test entry numbers
NN1	NAMES	test entry names
NN2	NAMES	check entry names

RESTRICTIONS: The data for the yield should be the first variable with other characters following.

Example:

```
'REFE'      RBDCHECK
'UNIT'      $ 75
'SCAL'      NR=3; NT=25; NV=3
'SCAL'      NCHECK=4; NTEST=21
'VARI'      CENTRY=20,21,22,25
'TEST'      TEST=1...19,23,24
'NAME'      NN1=A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,W,X
'NAME'      NN2=T,U,V,Y
'INPU'      2

'CLOSE'
'STOP'
```

**SUMMARY OF ACROSS ENVIRONMENTS MEAN FROM
RANDOMIZED BLOCK DESIGNS**

(ACROSS.RBD)

This program is designed to make a two-way table of genotypes and environments. The user should define in the program the following identifiers:

NR	SCALAR	No. of replications
NT	SCALAR	No. of treatments
NV	SCALAR	No. of variables
NCHECK	SCALAR	No. of check entries
NTEST	SCALAR	No. of test entries
NL	SCALAR	No. of locations
CENTRY	VARIATE	check entry numbers
TEST	VARIATE	test entry numbers
NN1	NAMES	test entry names
NN2	NAMES	check entry names

RESTRICTIONS: The yield data should be the first variable in all the files. The data should always go in the replication order (first replication data for all the entries first, 2nd replication next and so on).

Example:

```
'REFE'   RBDCHECK
'UNIT'   $ 75
'SCAL'   NR=3: NT=25: NV=3
'SCAL'   NCHECK=4: NTEST=21 :NL=2
'VARI'   CENTRY=20,21,22,25
'TEST'   TEST=1...19,23,24
'NAME'   NN1=A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,W,X
'NAME'   NN2=T,U,V,Y
'INPU'   2
:
'CLOSE'
'STOP'
```

NOTE: The user has to change the 'PRINT' statements at the end of the program depending on the number of environments. The following statements are for 2 environments.

```
'PRIN/P' .....V(1),R2(1),V(2),R2(2)
:           .....VV(1),R3(1),VV(2),R3(2)
```

Supposing the user has 4 environments, then the 'PRINT' statement will be

```
'PRIN/P' .....V(1),R2(1),V(2),R2(2),V(3),R2(3),V(4),R2(4)
:           .....VV(1),R3(1),VV(2),R3(2),VV(3),R3(3),VV(4),R3(4)
```

TRIPLE/SQUARE LATTICE DESIGNS

(LATTICE.SUM)

This program has been developed to make a summary table of characteristics from triple or square lattice designs with any number of replications. The user has to define in the program the following identifiers:

NT	SCALAR	No. of treatments
NV	SCALAR	No. of variables
SREP	FACTOR	Repeat of the design
UREP	FACTOR	No. of replications
BWR	FACTOR	No. of blocks within replications
PLOT	FACTOR	Plots within blocks
NCHECK	SCALAR	No. of check entries
NTEST	SCALAR	No. of test entries
CENTRY	VARIATE	check entry numbers
TEST	VARIATE	test entry numbers
PRCNT	INTEGER	indicate 1 - if percentage is based on check entry or else 2 if it is on grand mean
NCMEAN	SCALAR	check number to be used for calculating percentage of mean; 0 - if the grand mean is taken for percentage.
NN1	NAMES	test entry names
NN2	NAMES	check entry names

RESTRICTIONS: The data for the yield should be the first variable with other characters following.

```
'REFE' SQLAT
'UNIT' $ 100
'SCAL' NT=25; NR=4; NV=2; NCMEAN=20
'SCAL' NCHCK=4 : NTEST=21
'INTE' PRCNT=1
'VARI' CENTRY=20,21,22,25
'VARI' TEST=1..19,23,24
'NAME' NN1=A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,W,X
'NAME' NN2=T,U,V,Y
'FACT' SREP $ 1=100(1) : UREP $ 4
'FACT' BWR $ 5 : PLOT $ 5=(1..5)20
'FACT' TREAT $ 25
```

```
'CLOSE'
'STOP'
```

**SUMMARY OF ACROSS ENVIRONMENTS MEAN FROM
TRIPLE/SQUARE LATTICE DESIGNS**

(LATTICE.ACR)

This program is designed to make a two-way table of genotypes and environments. The user should define the following identifiers in the program:

NR	SCALAR	No. of replications
NT	SCALAR	No. of treatments
NV	SCALAR	No. of variables
SREP	FACTOR	Repeat of the design
UREP	FACTOR	No. of replications
BWR	FACTOR	No. of blocks within replications
PLOT	FACTOR	Plots within blocks
NCHECK	SCALAR	No. of check entries
NTEST	SCALAR	No. of test entries
CENTRY	VARIATE	check entry numbers
TEST	VARIATE	test entry numbers
NN1	NAMES	test entry names
NN2	NAMES	check entry names

RESTRICTIONS: The yield data should be the first variable in all the files.

Example:

```
'REFE' SOLAT
'UNIT' $ 100
'SCAL' NT=25: NR=4: NV=2: NL=2
'SCAL' NCHCK=4 : NTEST=21
'VARI' CENTRY=20,21,22,25
'VARI' TEST=1...19,23,24
'NAME' NN1=A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,W,X
'NAME' NN2=T,U,V,Y
'FACT' SREP $ 1=100(1) : UREP $ 4
'FACT' BWR $ 5 : PLOT $ 5=(1...5)20
'FACT' TREAT $ 25
:
'CLOSE'
'STOP'
```

NOTE: The user has to change the 'PRINT' statements at the end of the program depending on the number of environments. The following statements are for 2 environments.

```
'PRIN/P' ..... ,V(1),R2(1),V(2),R2(2)
: ..... ,VV(1),R3(1),VV(2),R3(2)
```

Supposing the user has 4 environments, then the 'PRINT' statement will be

```
'PRIN/P' ..... ,V(1),R2(1),V(2),R2(2),V(3),R2(3),V(4),R2(4)
: ..... ,VV(1),R3(1),VV(2),R3(2),VV(3),R3(3),VV(4),R3(4)
```


EXAMPLE OUTPUT FROM PROGRAM 1

Table : Summary of performance for _____

Entry	Entry No	Grain yield			Days to 50% Bloom	Height (cm)
		Mean (kg/ha)	Rank	% of Check		
F	6	3120	1	128	52	232
E	5	2940	2	121	49	218
C	3	2850	3	117	51	225
H	8	2840	4	117	49	167
D	4	2770	5	114	53	234
S	19	2760	6	114	51	226
Q	17	2690	8	111	50	220
L	12	2670	9	110	50	220
P	16	2630	10	108	51	238
W	23	2550	11	105	49	222
I	9	2520	12	104	50	220
K	11	2500	13	103	49	212
A	1	2460	14	101	51	226
J	10	2460	15	101	49	215
M	13	2460	16	101	51	224
X	24	2440	17	100	51	228
G	7	2390	21	98	49	220
N	14	2330	22	96	49	223
B	2	2300	23	94	51	153
R	18	2290	24	94	48	216
O	15	1970	25	81	51	232
CHECKS						
Y	25	2730	7	112	47	205
T	20	2430	18	100	51	232
U	21	2400	19	99	52	216
V	22	2390	20	98	51	219
SE+/-		158.9			0.4	3.4
MEAN		2560			50	218
CV(%)		10.8			1.5	2.7

EXAMPLE OUTPUT FROM PROGRAM 2

Table : Summary of performance for _____

Entry	Entry No	Grain yield			Days to 50% Bloom	Height (cm)
		Mean (kg/ha)	Rank	% of grand mean		
F	6	3120	1	122	52	232
E	5	2940	2	115	49	218
C	3	2850	3	112	51	225
H	8	2840	4	111	49	167
D	4	2770	5	108	53	234
S	19	2760	6	108	51	226
Q	17	2690	8	105	50	220
L	12	2670	9	105	50	220
P	16	2630	10	103	51	238
W	23	2550	11	100	49	222
I	9	2520	12	99	50	220
K	11	2500	13	98	49	212
A	1	2460	14	96	51	226
J	10	2460	15	96	49	215
M	13	2460	16	96	51	224
X	24	2440	17	95	51	228
G	7	2390	21	93	49	220
N	14	2330	22	91	49	223
B	2	2300	23	90	51	153
R	18	2290	24	90	48	216
O	15	1970	25	77	51	232
CHECKS						
Y	25	2730	7	107	47	205
T	20	2430	18	95	51	232
U	21	2400	19	94	52	216
V	22	2390	20	93	51	219
SE+/-		158.9			0.4	3.4
MEAN		2560			50	218
CV(%)		10.8			1.5	2.7

EXAMPLE OUTPUT FROM PROGRAM 3

Table Summary of performance of Grain Yield at 2 locations

ENTRY	ENTRY	ACROSS							
		KG/HA		ATRIAL MEAN		PATANCHERU		HISAR	
		MEAN	RANK	MEAN	RANK	MEAN	RANK	MEAN	RANK
F	6	1930	1	124	2	3120	1	730	4
H	8	1790	2	120	3	2840	4	740	3
D	4	1790	3	124	1	2770	5	820	1
C	3	1710	4	104	9	2850	3	560	15
E	5	1700	5	98	14	2940	2	470	19
S	19	1690	6	107	6	2760	6	620	10
P	16	1650	8	109	5	2630	10	670	5
L	12	1650	9	106	8	2670	9	620	9
Q	17	1640	10	103	10	2690	8	590	12
M	13	1610	11	113	4	2460	16	760	2
I	9	1570	12	102	13	2520	12	610	11
K	11	1560	13	103	12	2500	13	620	8
W	23	1530	14	95	18	2550	11	520	17
J	10	1510	16	97	15	2460	15	560	14
A	1	1450	19	85	22	2460	14	430	20
N	14	1430	20	91	20	2330	22	530	16
X	24	1410	21	82	24	2440	17	390	22
G	7	1400	22	83	23	2390	21	420	21
R	18	1390	23	88	21	2290	24	500	18
B	2	1320	24	74	25	2300	23	340	23
O	15	1300	25	93	19	1970	25	640	7
CHECKS									
Y	25	1680	7	107	7	2730	7	620	8
V	22	1520	15	103	11	2390	20	650	6
T	20	1500	17	96	16	2430	18	570	13
U	21	1480	18	95	17	2400	19	560	15
SE+/-		87.1				158.9		71.3	
Mean		1570				2560		580	
CV(%)						10.8		21.3	

Table . Summary of performance of Days to Bloom

ENTRY	ENTRY	ACROSS		PATANCHERU		HISAR	
		MEAN	RANK	MEAN	RANK	MEAN	RANK
D	4	53.0	1	52.7	1	53.3	2
F	6	52.8	2	51.7	3	54.0	1
P	16	52.2	3	51.3	4	53.0	3
O	15	51.5	4	50.7	6	52.3	4
I	9	51.2	5	50.3	7	52.0	5
B	2	51.2	5	51.0	5	51.3	6
X	24	51.0	6	50.7	6	51.3	6
A	1	50.5	8	50.7	6	50.3	8
C	3	50.5	8	50.7	6	50.3	8
M	13	50.2	9	51.0	5	49.3	11
S	19	50.2	9	51.0	5	49.3	11
W	23	50.0	10	49.0	10	51.0	7
J	10	49.8	11	49.3	9	50.3	8
K	11	49.7	12	49.3	9	50.0	9
L	12	49.5	13	49.7	8	49.3	11
N	14	49.5	14	49.0	10	50.0	9
E	5	49.3	15	49.0	10	49.7	10
G	7	49.2	16	49.0	10	49.3	11
Q	17	49.2	16	49.7	8	48.7	12
H	8	48.2	17	49.0	10	47.3	14
R	18	47.8	18	47.7	11	48.0	13
CHECKS							
U	21	50.8	7	52.0	2	49.7	10
V	22	50.5	8	50.7	6	50.3	8
T	20	50.2	9	50.7	6	49.7	10
Y	25	47.2	19	47.0	12	47.3	14
SE+/-		0.41		0.45		0.70	
Mean		50.2		50.1		50.3	
CV(%)				1.5		2.4	

EXAMPLE OUTPUT FROM PROGRAM 4

Table : Summary of performance for ___ 198_

Entry	Entry No	Grain yield			Head weight (kg/ha)
		Mean (kg/ha)	Rank	% of mean	
L	12	4210	1	107	4985
B	2	4180	2	106	5238
M	13	4140	3	105	5127
C	3	4120	4	105	5034
J	10	4100	5	104	4851
E	5	4070	6	103	4913
R	18	4010	7	102	4900
K	11	4000	8	102	4988
P	16	3940	9	100	4633
O	15	3930	10	100	4980
D	4	3860	12	98	4510
I	9	3830	13	97	4934
N	14	3750	14	95	4290
A	1	3560	17	91	4249
S	19	3560	18	91	4303
G	7	3550	19	90	4931
F	6	3510	20	89	4264
H	8	3490	21	89	4232
X	24	3290	23	84	4131
W	23	3080	24	78	3784
Q	17	2830	25	72	3548

CHECKS

T	20	3930	11	100	4501
U	21	3620	15	92	4301
V	22	3570	16	91	4275
Y	25	3320	22	84	3936
SE+/-		252.0			293.3
MEAN		3740			4554
CV(%)		11.7			11.2

EXAMPLE OUTPUT FROM PROGRAM 5

Table . Summary of performance of Grain Yield at 2 locations

ENTRY	ENTRY	ACROSS							
		KG/HA		TRIAL MEAN		PATANCHERU		HISAR	
		MEAN	RANK	MEAN	RANK	MEAN	RANK	MEAN	RANK
J	10	3660	1	117	1	3600	6	3720	1
I	9	3620	2	116	2	3620	5	3620	2
B	2	3470	3	111	3	3490	12	3450	3
C	3	3450	4	109	4	3820	2	3080	8
N	14	3400	5	107	6	4140	1	2650	17
G	7	3380	6	107	5	3570	8	3190	7
H	8	3320	7	106	7	3560	9	3080	9
D	4	3320	8	105	8	3560	10	3080	10
F	6	3310	9	105	9	3710	4	2920	14
S	19	3290	11	105	10	3350	14	3230	5
R	18	3280	12	105	12	3340	15	3220	6
A	1	3230	13	103	13	3390	13	3070	11
P	16	3170	14	101	14	3290	16	3050	12
L	12	3100	15	99	15	3230	17	2960	13
O	15	3070	16	97	16	3580	7	2560	22
Q	17	2950	18	95	17	2620	25	3280	4
M	13	2860	20	91	20	2820	22	2890	15
E	5	2840	21	90	21	3070	20	2610	18
K	11	2820	22	89	22	3090	19	2540	23
X	24	2690	24	86	24	2800	23	2580	20
W	23	2510	25	80	25	2690	24	2320	25
CHECKS									
U	21	3310	10	105	11	3770	3	2850	16
T	20	2960	17	93	18	3550	11	2370	24
V	22	2880	19	91	19	3150	18	2600	19
Y	25	2750	23	87	23	2930	21	2570	21
SE+/-		156.3				230.2		211.5	
Mean		3140				3350		2940	
CV(%)						13.7		14.4	

Table . Summary of performance of Head Weight
at 2 locations

ENTRY	ENTRY	ACROSS		PATANCHERU		HISAR	
		MEAN	RANK	MEAN	RANK	MEAN	RANK
R	18	5192	1	4297	14	6087	1
J	10	5007	2	4525	10	5489	2
B	2	4791	3	4592	8	4990	6
N	14	4714	4	5119	1	4309	15
G	7	4707	5	4293	15	5122	3
C	3	4698	6	4738	3	4658	12
I	9	4673	7	4336	13	5010	5
D	4	4651	8	4603	6	4699	10
S	19	4648	9	4423	11	4873	7
P	16	4640	10	4220	16	5060	4
H	8	4636	11	4593	7	4680	11
A	1	4575	12	4338	12	4812	9
F	6	4464	13	4610	5	4319	14
M	13	4354	15	4162	18	4546	13
O	15	4337	17	4577	9	4097	17
L	12	4221	18	4134	19	4309	16
Q	17	4206	19	3575	25	4837	8
K	11	4019	20	4196	17	3842	23
E	5	4008	21	3971	20	4044	18
X	24	3838	23	3649	23	4028	19
W	23	3663	25	3603	24	3724	24
CHECKS							
U	21	4368	14	4754	2	3982	21
T	20	4339	16	4655	4	4022	20
V	22	3923	22	3940	21	3905	22
Y	25	3680	24	3734	22	3626	25
SE+/-		175.5		252.6		243.9	
Mean		4414		4305		4523	
CV(%)				11.7		10.8	