CHAPTER-VI

Studies on bivoltine × bivoltine mulberry silkworm hybrids for pooled Autumn seasons (commercial seasons)

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5.1 Results :

The performances of **Bi x Bi hybrids** i.e. SLD4 x SLD8 , Gen 3 x Gen 2, CSR2 x CSR4 , APS105 x APS 126 , APS45 x APS126 and CSR46 x CSR47 during Autumn season at different temperature levels i.e., 24±3◦C and 25±5◦C with constant humidity of 79±2 % is given below (Table 33 to Table 48 and Fig. 31 to Fig. 45):

Fecundity: The analysed data revealed that fecundity of Bi x Bi hybrids reared at 25±5◦C and 79±2 % ranged from 414.4 (SLD4 x SLD8) to 461.15 (APS105 x APS 126).Among the six hybrids highest evaluation index value was observed in the hybrid APS105 x APS 126 (EIV 64.4527) followed by CSR2 x CSR4 (EIV 57.92343) and APS45 x APS126 (EIV 51.6498)

Hatchability : The analysed data revealed that fecundity of Bi x Bi hybrids reared at 25±5◦C and 9±2% ranged from 71.565 % (SLD4 x SLD8) to 87.5% (CSR2xCSR4). Hatching percentage was observed highest in CSR2 x CSR4 (EIV 57.34686) followed by APS45 x APS12 (EIV 55.4797)

Effective rate of rearing (ERR/Number) : The economic output of mulberry silkworm rearing as reflected by effective rate of rearing in number (ERR) ranged from 3489 (Gen 3 x Gen 2) to 5918 (CSR46 x CSR47) reared at 25±5◦C and 79±2 % . Among the six hybrids highest evaluation index value was observed in the hybrid CSR46 x CSR47 (E IV 63.08016) followed by SLD4 x SLD8 (EIV 55.74526) and CSR2 x CSR4 (EIV 53. 96786)

Cocoon yield/10,000 larvae by weight : The cocoon yield by weight ranged from 4.815 kg (Gen 3 x Gen 2)to 8.765 kg (CSR46 x CSR47)at 25±5◦C and 79±2% . Significant difference in cocoon yield among the six Bi x Bi hybrids was noticed in CSR46 x CSR47 (EIV 55.88344) followed by CSR2 x CSR4 (EIV 50.67123) and SLD4 x SLD8 (EIV 46. 41841)

Single cocoon weight : cocoon weight among hybrids reared at 25±5◦C and 79±2% ranged from 1.3735 (APS105 x APS 126) to 1.5535 g (Gen 3 x Gen 2) . Significant difference in single cocoon weight among the six Bi x Bi hybrids was noticed in Gen 3 x Gen 2 (EIV 61.18333) followed by (CSR2 x CSR4) (EIV 57.26667) and CSR46 x CSR47 (EIV 52. 1667) .

Shell weight : The shell weight ranged from 0.2595 (APS105 x APS 126) to 0.3225 g (CSR46 x CSR47) at 25±5◦C and 79±2 % . at 25±5◦C and 79±2◦C . Significant difference in shell weight for all the hybrids was recorded in CSR46 x CSR47 (EIV 61.86404) followed by (CSR2 x CSR4) (EIV 57.23684) and Gen 3 x Gen 2 (EIV 55.26316) .

Shell percentage : The analyzed data revealed that shell ratio among the six Bi x Bi hybrids reared at 25±5◦C and 79±2 % ranged from 18.785 % (APS105 x APS 126) to 21.675 % (CSR46 x CSR47). Significant difference was observed among the six Bi x Bi hybrids in CSR46 x CSR47 (EIV 60.461143) followed by CSR46 x CSR47 (EIV 61.14432) and SLD4 x SLD8 (EIV 55.9350).

Yield : Cocoon yield was calculated per 10,000 larvae brushed and expressed in terms of yield / 100 dfls (kg). The cocoon yield among the six Bi x Bi hybrids reared at 25±5◦C and 79±2% ranged from 19.26 (Gen 3 x Gen 2) to 35.06 kg. (CSR46 x CSR47). Significant difference was observed among the six Bi x Bi hybrids in CSR46 x CSR47 (EIV 59.87009) followed by CSR2 x CSR4 (EIV 55. 42332) and SLD4 x SLD8 (EIV 51. 78747).

Filament length : The trait filament length ranged from 609.5 (APS45 x APS126) to 842 m (Gen 3 x Gen 2) at 25±5◦C and 79±2% . Significant difference was observed among the six Bi x Bi hybrids in Gen 3 x Gen 2 (EIV 69.51999) followed by SLD4 x SLD8 (EIV 55.67114) and CSR46 x CSR47 (EIV 52.22459).

Filament weight : The trait filament weight ranged from 17.925 (SLD4 x SLD8) to 23.83 cg (Gen 3 x Gen 2) at 25±5◦C and 79±2% . Significant difference was observed among the six Bi x Bi hybrids in Gen 3 x Gen 2 (EIV 70. 199) followed by APS105 x APS 126 (EIV 54.9005) and CSR46 x CSR47 (EIV 54.35323).

Filament size: The trait filament size ranged from 2.27 (APS105 x APS126) to 2.75d (CSR2 x CSR4) at 25±5◦C and 79±2%. Significant difference was observed among the six Bi x Bi hybrids in CSR2 x CSR4 (EIV 61.97279) followed by Gen 3 x Gen 2 (54.14966) and SLD4 x SLD8 (EIV 50.7483).

Reelability : The reelability of the hybrids reared at 25±5◦C and 79±2% ranged from 76.60 (Gen 3 x Gen 2) to 85.10% (CSR46 x CSR47). Significant difference was observed among the six Bi x Bi hybrids in CSR46 x CSR47 (EIV 65.46763) followed by APS45 x APS126 (EIV 61.13309) and APS105 x APS126 (EIV 52.71583).

Raw silk percentage : The raw silk percentage of the hybrids reared at 25±5◦C and 79±2% ranged from 24.75 (APS105 x APS126) to 33.36% (APS45 x APS126). Significant difference was observed among the six Bi x Bi hybrids in APS45 x APS126 (EIV 66.38436) followed by CSR46 x CSR47 (EIV 56.20521) and SLD4 x SLD8 (EIV 44.69055)..

Neatness : Neatness did not show much variation in the breeds . It ranged from 92.5 (Gen 3 x Gen 2) to 93.5 (CSR2 x CSR4) at 25±5◦C and 79±2%, respectively. The highest EI value observed in CSR2 x CSR4 (EIV 65.6903)

Boil –off loss : Among the six Bi x Bi hybrids, highest EI value observed in CSR2 x CSR4 (EIV 62.07970) .

The mean *evaluation index* pertaining to the fifteen quantitative traits of six promising hybrids of mulberry silkworm are presented in table 33.

Each breed showed superiority in certain traits only.

The highest mean effective rate of rearing by number, effective rate of rearing by weight and mean shell weight, shell ratio, yield and reelability percentage were shown by CSR46 x CSR47.

The highest mean hatching percentage, filament size (D), neatness are shown by the hybrid CSR2 x CSR4.

The highest mean single cocoon weight, mean filament length in meter, filament weight, are shown by hybrid Gen3 x Gen2.

The highest mean of fecundity exhibited by the hybrid APS105 x APS 126.

The highest mean raw silk (%) shown by APS45 x APS12

Thus, analysis of the growth and economic traits of cocoon (during pooled Autumn commercial season) revealed that three mulberry silkworm breed viz. CSR46 X CSR47(EIV54.3), CSR2 x CSR4(EIV53.0) and APS45 X APS12(EIV49.10) are the most promising for commercial exploitation in agro climatic condition of North eastern region of India.

Plate : 12 Bivoltine x Bivoltine hybrid silkworm (Plain larvae)

Table-33 : Evaluation Index Value of Bi x Bi.hybrid (Pooled autumn)

SL. No.	Hybrid	EI value for Fecundity	EI value for Hat%	EI value for ERR(No.)	EI value for ERR9Wt	EI value for Sg.C.wt(g)	EI value for Sg.S.wt(g)	EI value for SR%	EI value for Yield/100 DFLs.
1	SLD4	32.87162	27.5282	55.74526	46.4184	42.76667	52.63158	64.4748079	51.7874706
	X								
	SLD8								
2	GEN3								
	x	48.67682	52.57519	32.67661	31.6564	61.18333	55.26316	43.2109308	39.2056892
	GEN2								
3	CSR2								
	x	57.93243	57.48496	53.96786	50.6712	57.26667	57.23684	50	55.4233194
	CSR4								
4	APS105								
	x	64.4527	53.81579	41.75136	35.8896	31.18333	34.21053	35.7813834	42.8154198
	APS126								
5	APS45								
	x	51.6498	55.58271	52.84134	45.3681	32.68333	38.81579	45.6874466	50.8980774
	APS12								
6	CSR46								
	x	44.42007	53.1015	63.08016	55.8834	52.51667	61.86404	61.1443211	59.8700889
	CSR47								

Sl. No.	Hybrid	EI value for Filament Length (M)	EI value for Filament Wt.(cg)	EI value for Filament size(D)	EI value for Reelability	EI value for Raw silk %	EI value for neatness %	EI value for Boil-off
1	SLD4 × SLD8	55.671137	40.8209	50.7483	51.726619	44.69055	44.76987	48.94147
2	GEN3 × GEN2	69.51999	70.199	54.14966	34.892086	41.17264	44.76987	53.673724
3	CSR2 × CSR4	42.88758	43.9801	61.97279	35.791367	42.70358	65.69038	62.079701
4	APS105 × APS126	40.381	54.9005	29.31973	52.718527	38.33876	34.30962	48.816936
5	APS45 × APS12	43.764883	44.57711	46.66667	61.133094	66.38436	55.23013	45.267746
6	CSR46 × CSR 47	52.22459	54.35323	49.59184	65.467626	56.20521	55.23013	29.576588

	Total Evaluation Value (EI)	Average	Rank
SLD4			
X	711.5929	47.43	
SLD8			
GEN3			
x	732.8252	48.85	
GEN2			
CSR2			
x	795.0888	53	(II)
CSR4			
APS105			
x	638.6825	42.57	
APS126			
APS45	736.5506	49.1	(III)
x			
APS12			
CSR46	814.5295	54.3	(i)
x			
CSR47			

Table 34 : Mean fecundity of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
414.4	437.8	451.5	461.15	442.2	431.5

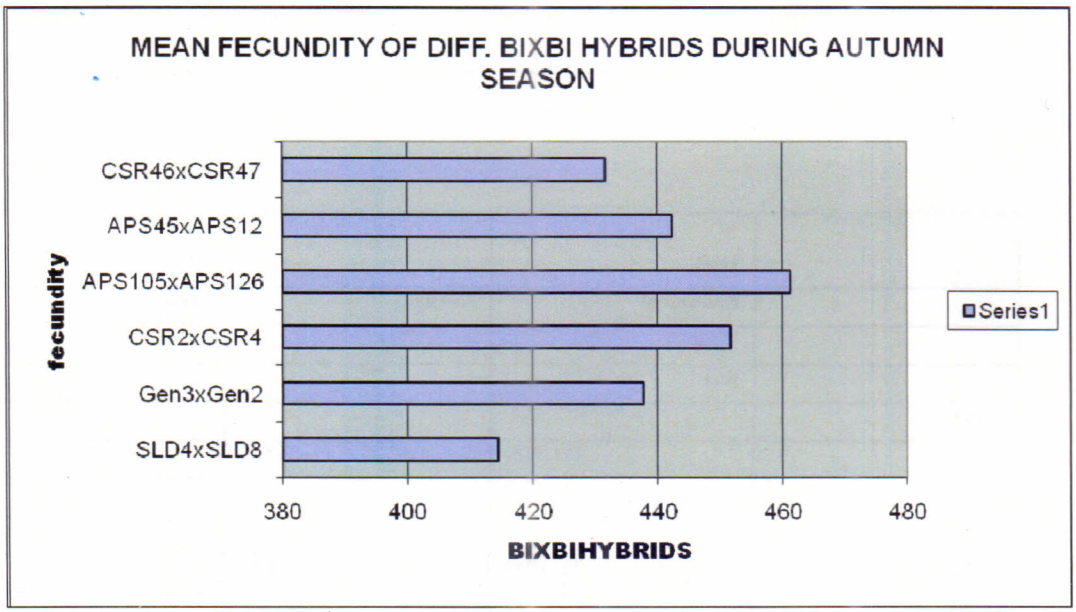

Fig 31 : Mean fecundity of BI × BI hybrids during autumn season

Table 35 : Mean hatching % of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
71.565	84.89	87.5	85.55	86.49	85.17

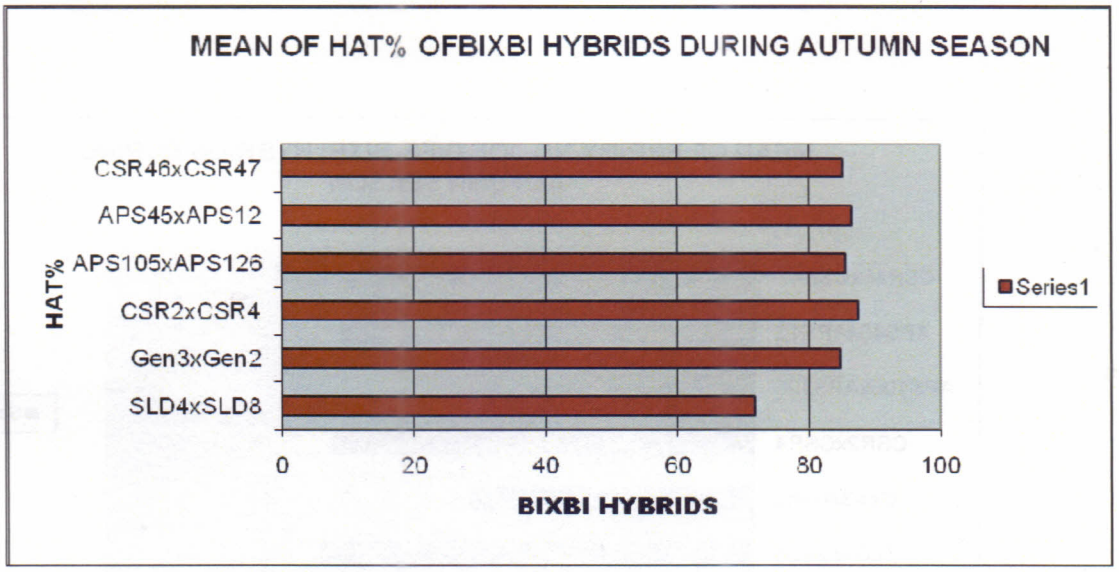

Fig 32 : Mean hatching % of BI × BI hybrids during autumn season

Table 36 : Mean of effect rate of rearing (by Number.) of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
5332	3489	5190	4214	5100	5918

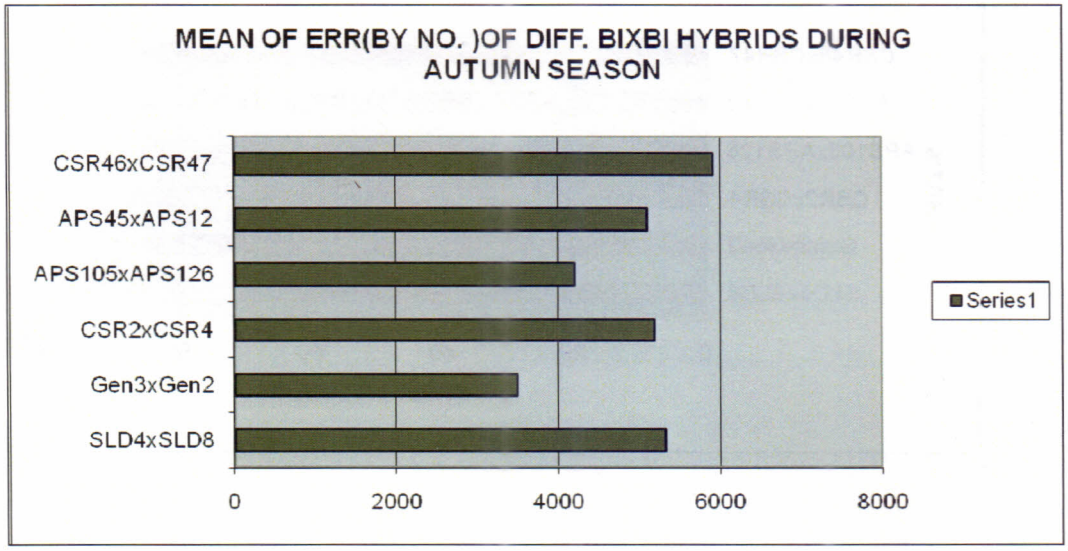

Fig 33 : Mean of effect rate of rearing (by number) of BI × BI hybrids during autumn season

Table 37 : Mean of effect rate of rearing (by weight) of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
7.22	4.815	7.915	5.505	7.05	8.765

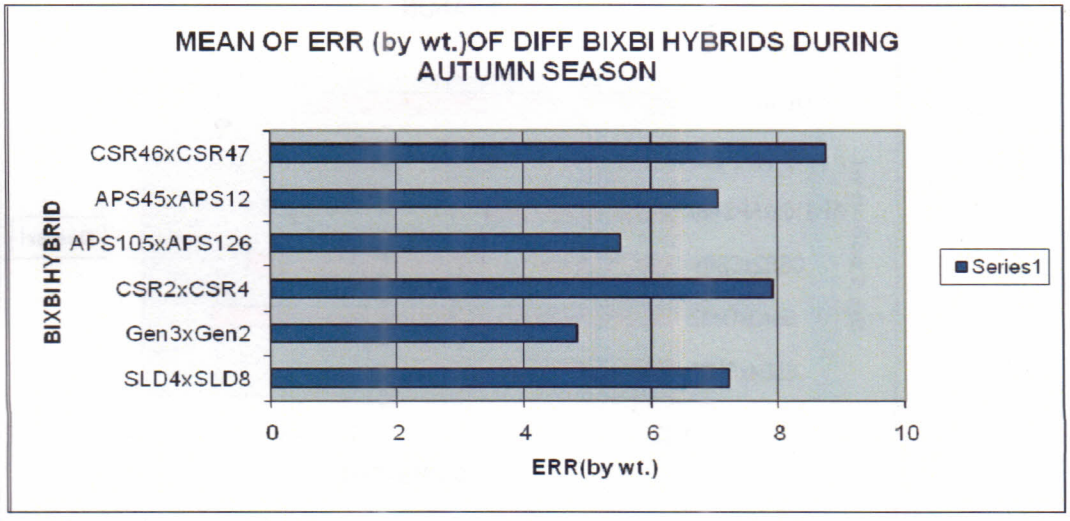

Fig 34 : Mean of effect rate of rearing (by weight) of BI × BI hybrids during autumn season

Table 38 : Mean of single cocoon weight of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
1.443	1.5535	1.53	1.3735	1.3825	1.5015

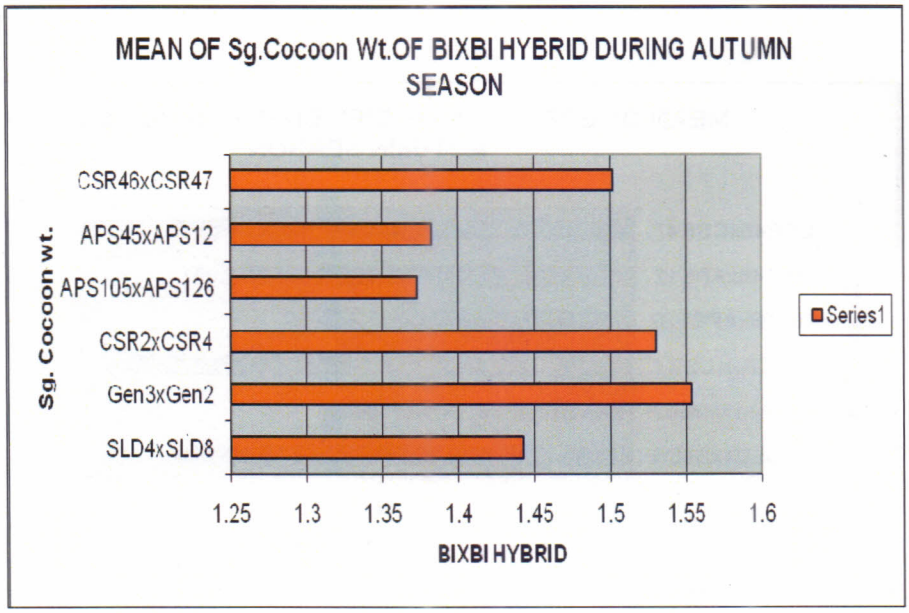

Fig 35 : Mean of single cocoon weight of BI × BI hybrids during autumn season

Table 39 : Mean of single shell weight (gram) of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
0.3015	0.3075	0.312	0.2595	0.27	0.3225

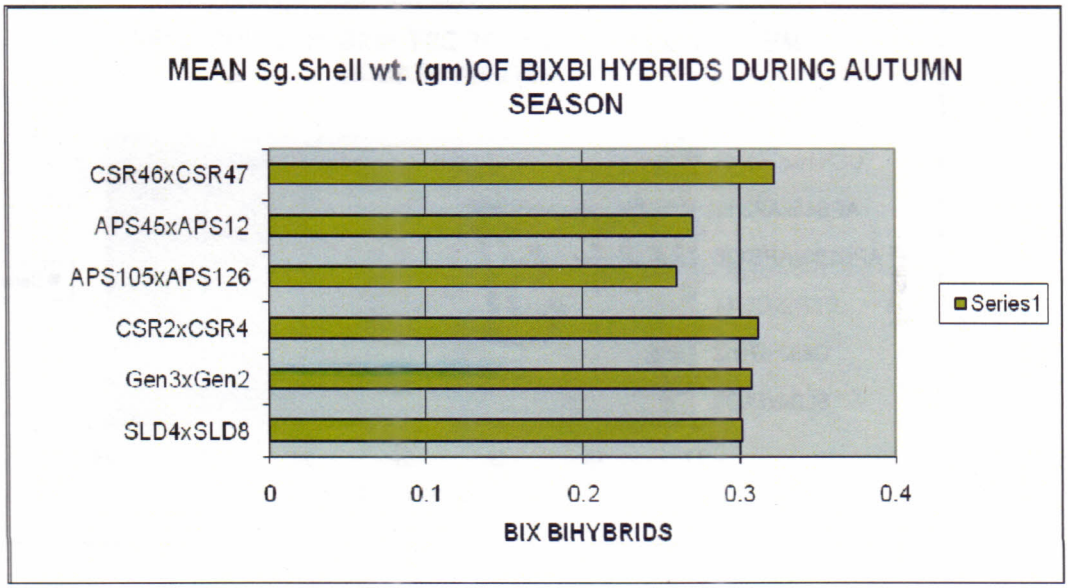

Fig 36 : Mean of single shell weight (gram) of BI × BI hybrids during autumn season

Table 40 : Mean of single shell ration of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
22.145	19.655	20.45	18.785	19.945	21.755

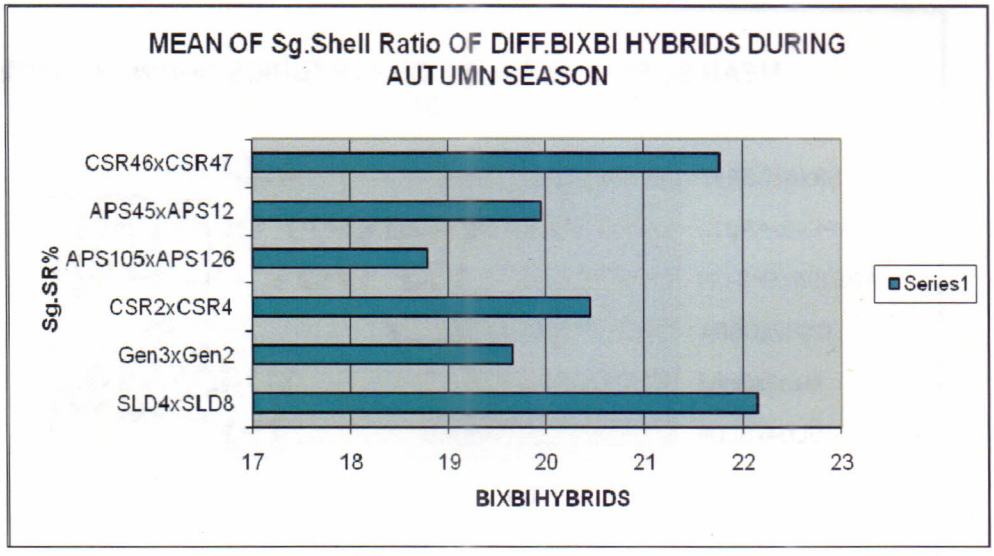

Fig : 37 Mean of single shell ration of BI × BI hybrids during autumn season

Table 41 : Mean of single yield/100dfls (kg) of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
28.88	19.26	31.66	22.02	28.2	35.06

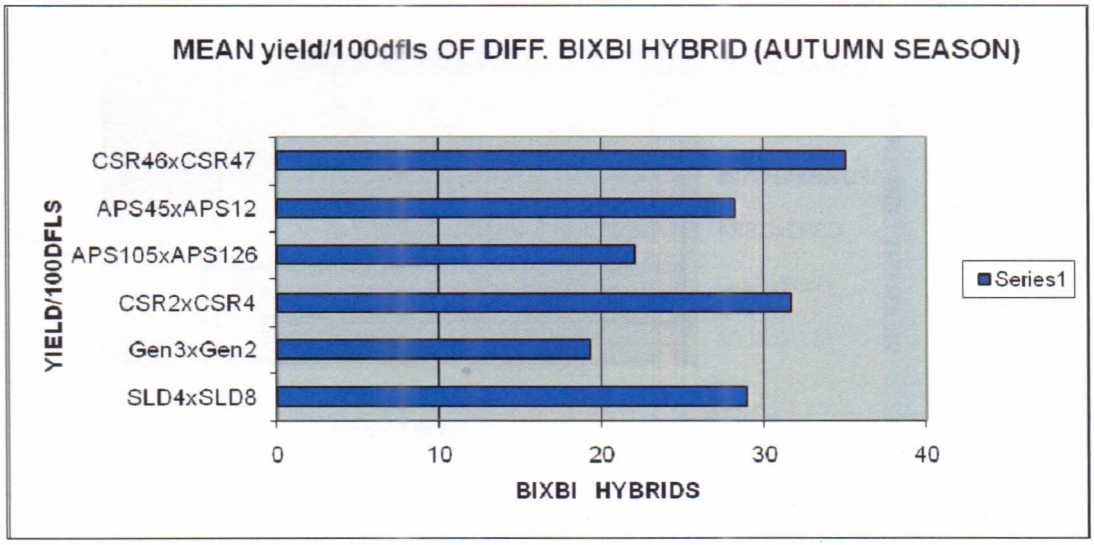

Fig 38 : Mean of single yield/100dfls (kg) of BI × BI hybrids during autumn season

Table 42 : Mean of single filament length(meters) of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
731.5	842	629.5	609.5	636.5	668.5

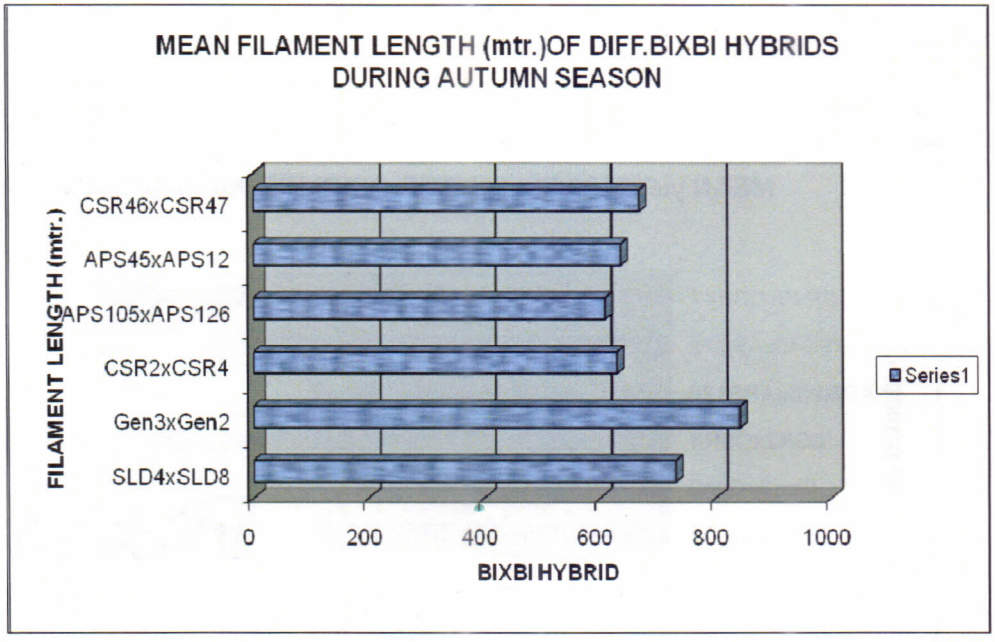

Fig 39 : Mean of single filament length(meters) of BI × BI hybrids during autumn season

Table 43 : Mean of single filament weight of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
17.925	23.83	18.56	20.755	18.68	18.895

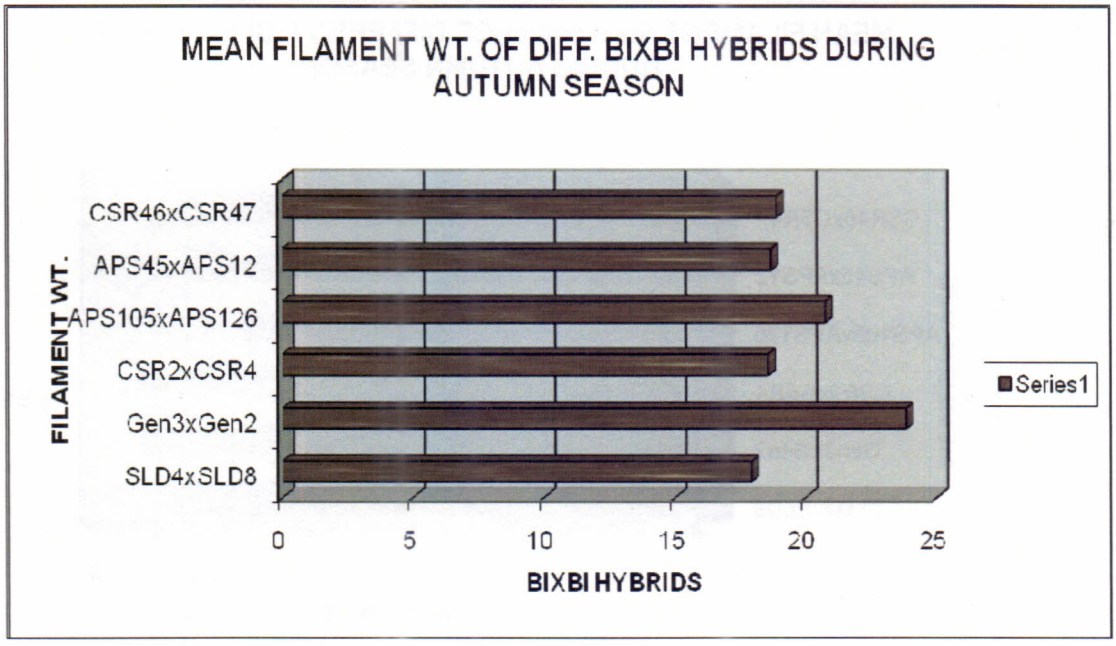

Fig 40 : Mean of single filament weight of BI × BI hybrids during autumn season

Table 44 : Mean of single filament size (Denier) of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
2.585	2.735	2.75	2.27	2.525	2.58

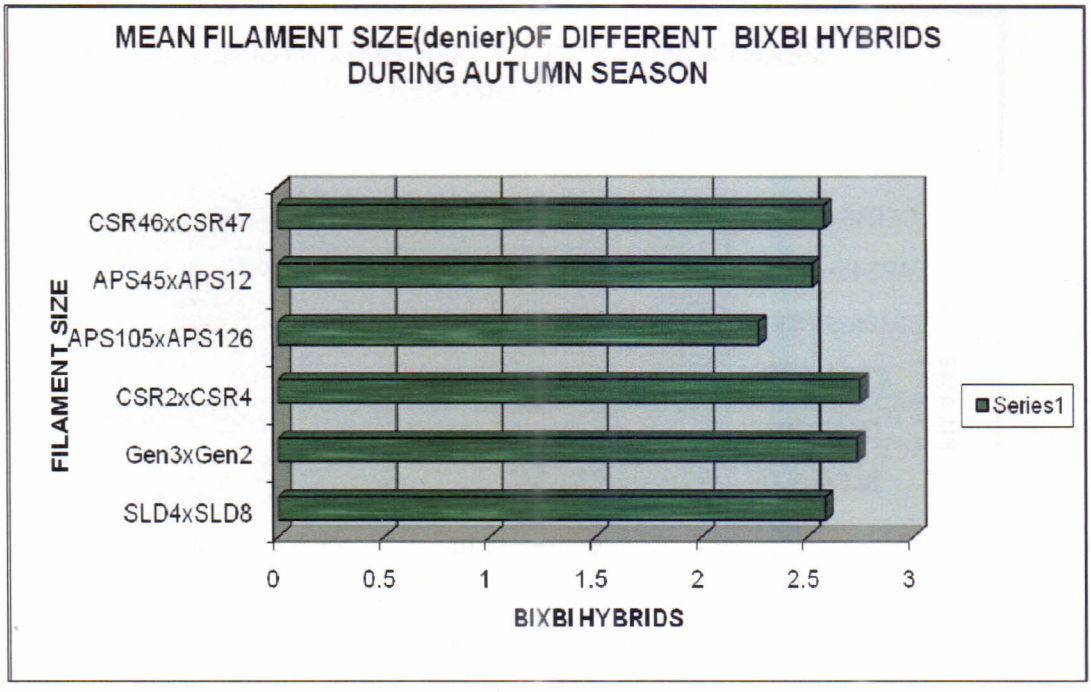

Fig 41 : Mean of single filament size (Denier) of BI × BI hybrids during autumn season

Table 45 : Mean of single reelability of different. BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
81.28	76.6	76.85	81.555	83.895	85.1

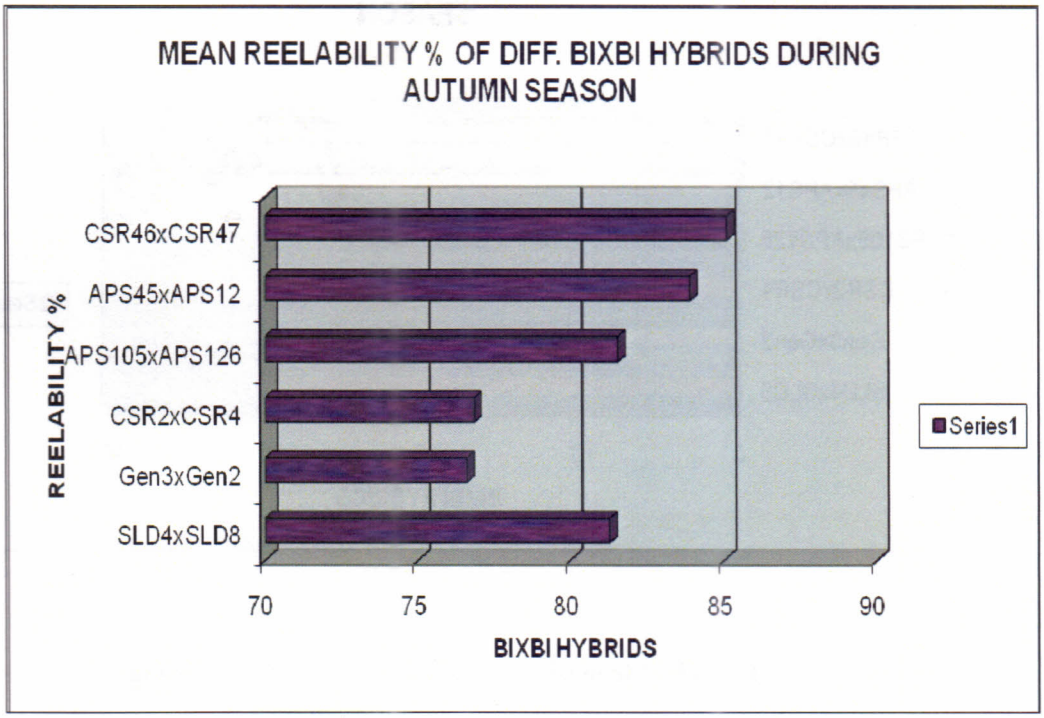

Fig 42 : Mean of single reelability of BI × BI hybrids during autumn season

Table 46 : Mean of raw silk of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
29.96	25.62	26.09	24.75	33.36	30.235

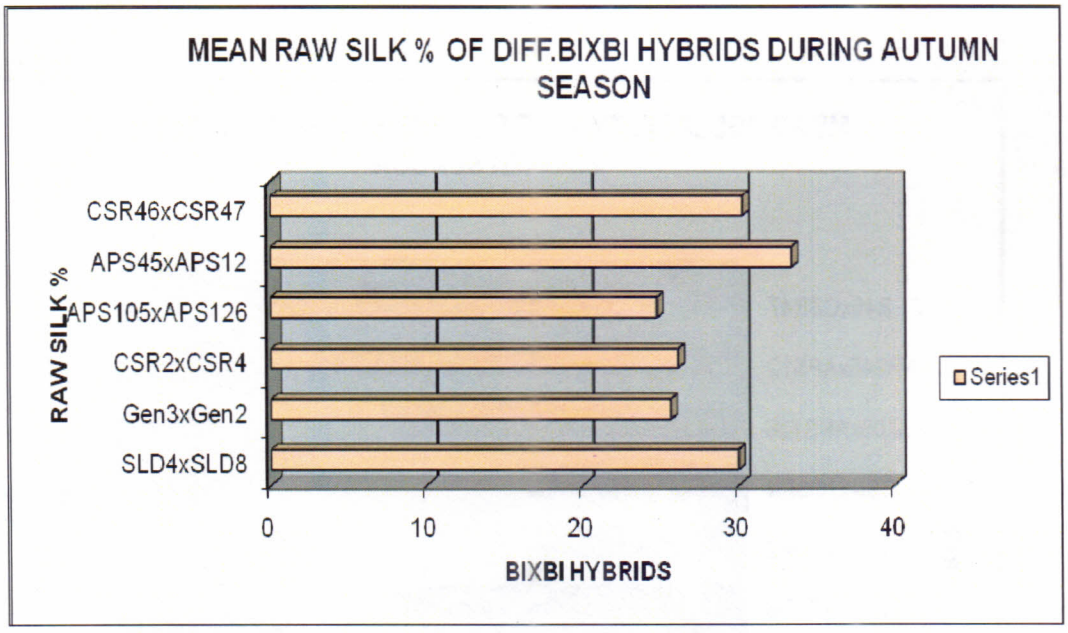

Fig 43 : Mean of raw silk of BI × BI hybrids during autumn season

Table 47 : Mean of neatness of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
92.5	92.5	93.5	92	93	93

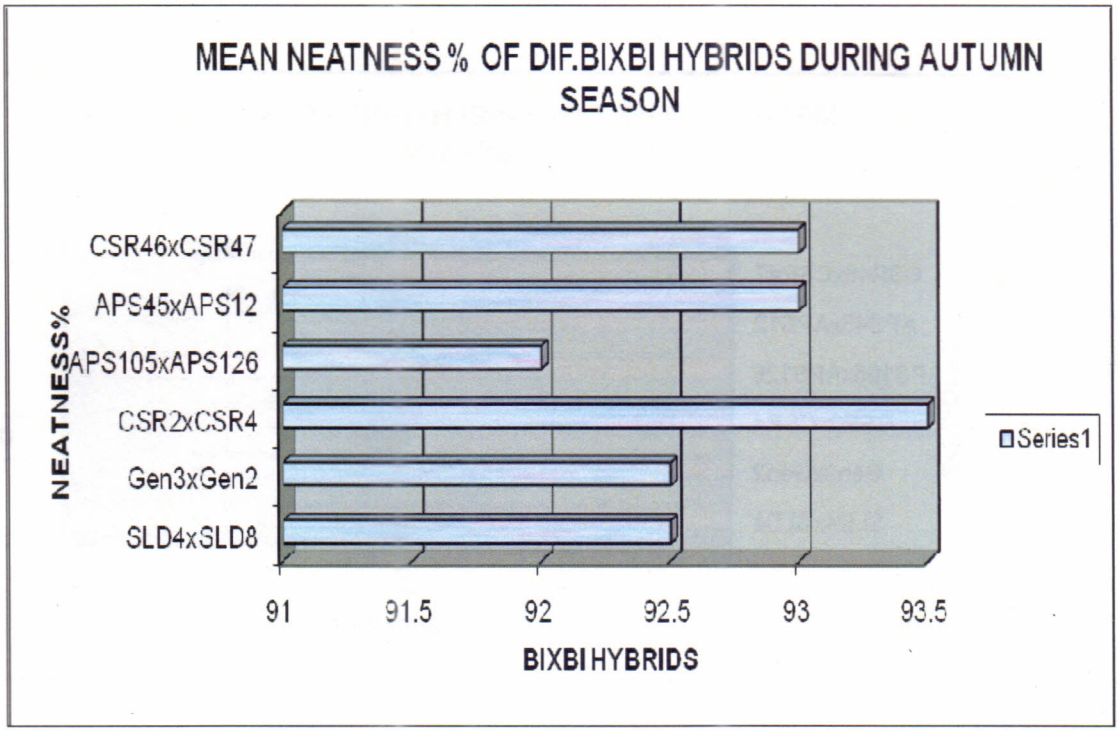

Fig 44 : Mean of neatness of BI × BI hybrids during autumn season

Table 48 : Mean of single boil-off of different BI × BI hybrids during autumn season

SLD4xSLD8	Gen3xGen2	CSR2xCSR4	APS105xAPS126	APS45xAPS12	CSR46xCSR47
27.665	28.435	28.21	29.81	25.18	28.45

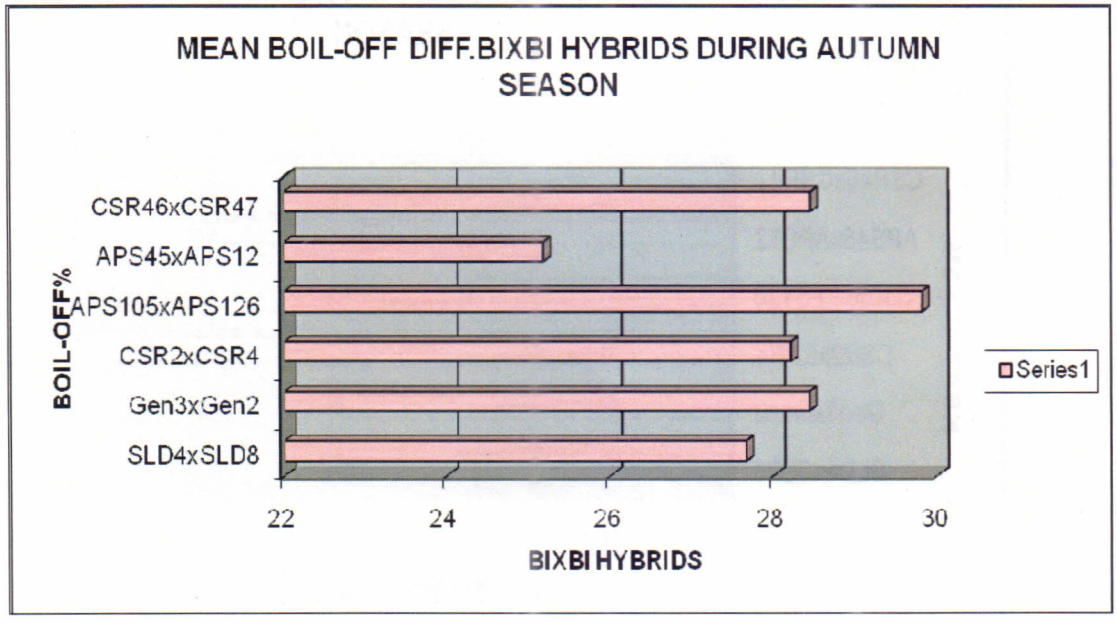

Fig 45 : Mean of single boil-off of BI × BI hybrids during autumn season

Plate : 12 Bivoltine hybrids worms (plain larvae)

5.2 Statistical analysis of Bivoltine x Bivoltine hybrids on pooled autumn seasons(commercial seasons)

One way Anova of Bivoltine x Bivoltine hybrids (pooled autumn season):

A: Oneway Anova on average fecundity (nos.)and rearing parameters of different bivoltine hybrids (pooled autumn season). (Table 5.2.1)

ANOVA

fecundity

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	26827.100	5	5365.420	5.259	.002
Within Groups	24485.200	24	1020.217		
Total	51312.300	29			

Name of the hybrid	Mean
1.SLD4 XSLD8	414.3 **d**
2.Gen3 X Gen2	437.9 **c**
3.CSR2 XCSR4	451.3 **a,b**
4.APS105xAPS126	461.7 **a**
5.APS45xAPS12	442.4 **b,c**
6.CSR46xCSR47	431.5 **c**
SEd(±)	20.20116
$CD_{.05}$	34.56418

ANOVA reveales that the bivoltine hybrids are highly significant ($p<.01$) for the trait fecundity.

From the CD and SEd value we see that the hybrid APS105 X APS126 and CSR2 X CSR4 are at par and CSR2 X CSR4, APS45 X APS12 are at par and APS45xAPS12, Gen3 X Gen2 ,

CSR46xCSR47are at par and implies that a, b and are at par with each other.

1. **Conclusion** : Relating to ANOVA on **average fecundity** (pooled autumn season)

From the average table it is observed that the different levels of bivoltine hybrids with to respect to the characteristic average fecundity is significant at .05 levels (highly significant).

Here the nature of significance difference between the various types of hybrid as (on the basis of t-test for difference of means).

Vs	1	2	3	4	5	6
1	--	NS	**	**	NS	NS
2	--	--	NS	NS	NS	NS
3	--	--	--	NS	NS	NS
4	--	--	--	--	NS	NS
5	--	--	--	--	--	NS
6	--	--	--	--	--	--

Levels of hybrid as

1. SLD4XSLD8
2. GEN3XGEN2
3. CSR2XCSR4
4. APS105XAPS126
5. APS45XAPS12
6. CSR46XCSR47

NS : Not significant

Sig(*) : Significant at .05 level

Sig(**) : Highly significant (both at .05 and .01 levels).

From above the first type of hybrid is highly significant difference with **3rd & 4th** types of hybrid.

A:Oneway Anova on average hatching (percentage)and rearing parameters of different bivoltine hybrids (pooled autumn season). (Table 5.2.2)

ANOVA

Hatching

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	3723.410	5	744.682	33.208	.000
Within Groups	538.198	24	22.425		
Total	4261.608	29			

Name of the hybrid	Mean
1.SLD4 XSLD8	71.564 **d**
2.Gen3 X Gen2	84.89 **b,c**
3.CSR2 XCSR4	87.492 **a**
4.APS105xAPS126	85.55 **a ,b,c**
5.APS45xAPS12	86.49 **a ,b,c**
6.CSR46xCSR47	87.17 **a ,b**
SEd(±)	2.994996
$CD_{.05}$	5.124438

ANOVA reveales that the bivoltine hybrids are highly significant ($p<.01$) for the trait hatching %.

From the CD and SEd value we see that the hybrid CSR2 X CSR4 and CSR46xCSR47,

APS45 X APS12, APS105xAPS126., are at par. Table reveals the rank of the tested hybrids

Conclusion : Relating to ANOVA on **average hatching** (pooled autumn)

From the ANOVA Table it is seen that the different levels of bivoltine hybrid with respect to the characteristic average hatching is highly significant.

Here the nature of significance between various type of hybrid as (on the basis of t-test for difference of means).

Vs	1	2	3	4	5	6
1	--	**	**	**	**	**
2	--	--	NS	NS	NS	NS
3	--	--	--	NS	NS	NS
4	--	--	--	--	NS	NS
5	--	--	--	--	--	NS
6	--	--	--	--	--	--

NS : Not significant

* : Significant at .05 level

** : Highly significant .

A:Oneway Anova on average effective rate of rearing by number and rearing performance of different bivoltine hybrids (pooled autumn season).
(Table 5.2.3)

ANOVA

Effective rate of rearing by number

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	76100216.000	5	15220043.200	235.636	.000
Within Groups	1550195.200	24	64591.467		
Total	77650411.200	29			

Name of the hybrid	Mean
1.SLD4 XSLD8	5332
2.Gen3 X Gen2	3488.8
3.CSR2 XCSR4	5190 **a**
4.APS105xAPS126	4214
5.APS45xAPS12	5100 **a**
6.CSR46xCSR47	5918
SEd(±)	160.73
$CD_{.05}$	275.10

ANOVA reveales that the bivoltine hybrids are highly significant ($p<.01$) for the trait Err by No

From the CD and SEd value we see that the hybrid APS45 X APS12 and CSR2 X CSR4 are at par.

1. **Conclusion** : From the ANOVA table it is indicate that the difference among the difference levels of Bivoltine hybrid are highly significant with respect to characteristics average effective rate of rearing by number (pooled autumn season). Here the nature of significance between various type of hybrid as (on the basis of t-test for difference of means).

Vs	1	2	3	4	5	6
1	--	**	NS	**	NS	**
2	--	--	**	**	**	**
3	--	--	--	**	NS	**
4	--	--	--	--	**	**
5	--	--	--	--	--	**
6	--	--	--	--	--	--

NS : Not significant

* : Significant at .05 level

** : Highly significant.

A:Oneway Anova on average Effective rate of rearing by weight and rearing parameters of different bivoltine hybrids (pooled autumn season).
(Table 5.2.4)

ANOVA

Effective rate of rearing by weight

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	218.504	5	43.701	76.814	.000
Within Groups	13.654	24	.569		
Total	232.158	29			

Name of the hybrid	Mean
1.SLD4 XSLD8	7.216 **a**
2.Gen3 X Gen2	4.814
3.CSR2 XCSR4	7.912
4.APS105xAPS126	5.504
5.APS45xAPS12	7.07 **a**
6.CSR46xCSR47	8.764
SEd(±)	0.4771
$CD_{.05}$	0.8163

ANOVA reveales that the bivoltine hybrids are highly significant ($p<.01$) for the trait Err by No.

From the CD and SEd value we see that the hybrids SLD4 x SLD8 and APS45x APS12 are at par.

1. **Conclusion** : From the ANOVA table it can be conclude that there is highly significant difference among the levels of bivoltine hybrid with respect to the characteristics average effective rate of rearing by weight.

Here the nature of significance between various type of hybrid as (on the basis of t-test for difference of means).

Vs	1	2	3	4	5	6
1	--	**	NS	**	NS	**
2	--	--	**	NS	**	**
3	--	--	--	**	NS	NS
4	--	--	--	--	**	**
5	--	--	--	--	--	NS
6	--	--	--	--	--	--

NS : Not significant

* : Significant at .05 level

** : Highly significant.

A:Oneway Anova on average single cocoone weight and rearing performance of different bivoltine hybrids (pooled autumn season).
(Table 5.2.5)

ANOVA

single cocoon weight

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.579	5	.116	7.491	.000
Within Groups	.371	24	.015		
Total	.950	29			

Name of the hybrid	Mean
1.SLD4 XSLD8	1.442 b, c
2.Gen3 X Gen2	1.553 a
3.CSR2 XCSR4	1.530 a , b
4.APS105xAPS126	1.371 c
5.APS45xAPS12	1.380 c
6.CSR46xCSR47	1.502 a ,b
SEd(±)	0.775
$CD_{.05}$	0.1327

ANOVA reveales that the bivoltine hybrids are highly significant ($p<.01$) for the trait hatching %.

From the CD and SEd value we see that the hybrid CSR2 X CSR4, CSR46xCSR47and

APS45 X APS12 APS105xAPS126., are at par table reveals the rank of the tested hybrids

1. **Conclusion** : From the ANOVA table it can be conclude that there is highly significant difference among the levels of hybrid groups w. r. t. the characteristics average sq. cocoon weight (pooled autumn season).

Here the nature of significance difference between the various types of hybrid as (on the basis of t-test for difference of means).

Vs	1	2	3	4	5	6
1	--	NS	NS	NS	NS	NS
2	--	--	NS	**	**	NS
3	--	--	--	**	**	NS
4	--	--	--	--	NS	**
5	--	--	--	--	--	**
6	--	--	--	--	--	--

NS : Not significant

* : Difference is significant at .05 level

** : Difference is highly significant

A.Oneway Anova on average Single shell weight and rearing performance of different bivoltine hybrids (pooled autumn season). (Table 5.2.6)

ANOVA

Single shell weight

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.062	5	.012	17.421	.000
Within Groups	.017	24	.001		
Total	.079	29			

Name of the hybrid	Mean
1.SLD4 XSLD8	0.301 a,b,c
2.Gen3 X Gen2	0.307 a,b

3.CSR2 XCSR4	0.312 a
4.APS105xAPS126	0.260 c
5.APS45xAPS12	0.270 b,c
6.CSR46xCSR47	0.323 a
SEd(±)	0.02
$CD_{.05}$	0.0342

ANOVA reveales that the bivoltine hybrids are highly significant ($p<.01$) for the trait single shell weight

From the CD and SEd value we see that the hybrid CSR46 X CSR47 and CSR2xCSR4,

Gen3 x Gen 2, SLD4 x SLD8 are at par. Table reveals the rank of the tested hybrids

1. **Conclusion** : From the ANOVA table, it is seen that the difference among the various levels of bivoltine hybrid with respect to the characteristics average sq. shell weight highly significant.

Here the nature of significant difference between various types of hybrid as given below (observed un t-test for difference of means).

Vs	1	2	3	4	5	6
1	--	NS	NS	**	NS	NS
2	--	--	NS	**	**	NS
3	--	--	--	**	**	NS
4	--	--	--	--	NS	**
5	--	--	--	--	--	**
6	--	--	--	--	--	--

NS : Not significant

* : Difference is significant at .05 level

** : Difference is highly significant.

A:Oneway Anova on average Single shell ratio(%) and rearing performance of different bivoltine hybrids (pooled autumn season).
(Table 5.2.7)

ANOVA

Shell ratio

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	109.181	5	21.836	9.075	.000
Within Groups	57.751	24	2.406		
Total	166.932	29			

Mean table of shell ratio :

Sl No.	Name of the hybrid	Mean
01.	1.SLD4 XSLD8	21.145 a,b
02.	2.Gen3 X Gen2	19.655 b,c
03.	3.CSR2 XCSR4	20.454 a,b
04.	4.APS105xAPS126	18.784 c
05.	5.APS45xAPS12	19.946 b,c
06	6.CSR46xCSR47	21.673 a
SEd(±)		0.981
$CD_{.05}$		1.6785

ANOVA reveales that the bivoltine hybrids are highly significant ($p<.01$) for the trait shell ratio..

From the CD and SEd value we see that the hybrid CSR46 X CSR47, SLD4 x SLD8 and CSR2xCSR4 are at par. Table reveals the rank of the tested hybrids.

1. ANOVA—**Shell ratio**

From the ANOVA table, it is seen that there is highly significant difference among the various groups of hybrids with respect to the characteristic of average sq. shell ratio (pooled autumn season).

Again the nature of significant difference between various types of hybrids with respect to the said characteristics are given below.

Vs	1	2	3	4	5	6
1	--	NS	NS	**	NS	**
2	--	--	NS	NS	NS	**
3	--	--	--	**	NS	NS
4	--	--	--	--	NS	**
5	--	--	--	--	--	**
6	--	--	--	--	--	--

NS : Not significant

* : Difference is significant at .05 level

** : Difference is highly significant.

A:Oneway Anova on average single yield per 100dfls.(kg.) and rearing performance of different bivoltine hybrids (pooled autumn season).
(Table 5.2.8)

ANOVA

Yield per 100 dfls

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3511.242	5	702.248	73.851	.000
Within Groups	228.214	24	9.509		
Total	3739.456	29			

Mean table of yield per 100 dfls.:

Sl No.	Name of the hybrid	Mean
01.	SLD4 XSLD8	29.112 a,b
02.	Gen3 X Gen2	19.256 c
03.	CSR2 XCSR4	31.648 a
04.	APS105xAPS126	22.016 c
05.	APS45xAPS12	28.308 b
06	CSR46xCSR47	35.056
SEd(±)		1.9503
$CD_{.05}$		3.337

ANOVA reveales that the bivoltine hybrids are highly significant (p<.01) for the trait Yield per 100 dfls .

From the CD and SEd value we see that the hybrid CSR2xCSR4 and SLD4 x SLD8 are at par.

The hybrid CSR46 X CSR47shows significant difference from other tested hybrids.

1. ANOVA—**Average yield**

   From the ANOVA table, it can be conclude that the difference among the levels of hybrid with respect to the characteristic of average yield/then dly (pooled autumn season) is highly significant.

   Again, the nature of significant difference between the levels of hybrid with respect to the said characteristics are given below.

Vs	1	2	3	4	5	6
1	--	**	NS	**	NS	**
2	--	--	**	NS	**	**
3	--	--	--	**	*	**
4	--	--	--	--	**	**
5	--	--	--	--	--	**
6	--	--	--	--	--	--

NS : Not significant

* : Difference is significant at .05 level

** : Difference is highly significant.

A:Oneway ANOVA on average filament length (meters) and rearing performance of different bivoltine hybrids (pooled autumn season).
(Table 5.2.9)
[DataSet2] G:\raw data combined A in filament length sav

ANOVA

Filament length

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	763977.067	5	152795.413	71.015	.000
Within Groups	51638.400	24	2151.600		
Total	815615.467	29			

Mean table of Filament length.:

Sl No.	Name of the hybrid	Mean
01.	SLD4 XSLD8	731.4
02.	Gen3 X Gen2	842
03.	CSR2 XCSR4	629.7 a,b
04.	APS105xAPS126	609.3 c
05.	APS45xAPS12	636.5 a,b
06	CSR46xCSR47	668.5 a
SEd(±)		29.337
$CD_{.05}$		50.196

ANOVA reveales that the bivoltine hybrids are highly significant ($p<.01$) for the trait filament length..

From the CD and SEd value we see that the hybrid CSR46 X CSR47, APS45 x APS12, CSR2xCSR4 are at par. The hybrid Gen3 xGen2 and SLD4 x SLD8 shows significant difference from other tested hybrids.

1. ANOVA—**Average filament length**

From the ANOVA table, it is conclude that the difference among the types of bivoltine (pooled autumn season) with respect to the characteristics average filament length is highly significant.

Again, the nature of significant difference between the levels of hybrid with respect to the said characteristics are given below.

Vs	1	2	3	4	5	6
1	--	**	**	**	**	**
2	--	--	**	**	**	**
3	--	--	--	NS	NS	NS
4	--	--	--	--	NS	**
5	--	--	--	--	--	NS
6	--	--	--	--	--	--

NS : Not significant

* : Difference is significant at .05 level

** : Difference is highly significant.

A:Oneway ANOVA on average filament weight and rearing performance of different bivoltine hybrids (pooled autumn season).
(Table 5.2.10)
[DataSet2] G:\raw data combined A in filament weight.sav

ANOVA

Filament weight

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	485.463	5	97.093	51.853	.000
Within Groups	44.939	24	1.872		
Total	530.402	29			

Mean table of filament weight :

Sl No.	Name of the hybrid	Mean
01.	SLD4 XSLD8	17.93 a
02.	Gen3 X Gen2	23.83
03.	CSR2 XCSR4	18.56 a
04.	APS105xAPS126	20.76
05.	APS45xAPS12	18.68 a
06	CSR46xCSR47	18.9 a
SEd(±)		0.865
$CD_{.05}$		1.481

ANOVA reveales that the bivoltine hybrids are highly significant ($p<.01$) for the trait filament weight.

From the CD and SEd value we see that the hybrid CSR46 X CSR47,APS45 x APS12, CSR2xCSR4 and SLD4 x SLD8 are at par.

The hybrid Gen3 xGen2 and APS105 x APS126 shows significant difference from other tested hybrids.

A:Oneway on average raw silk and rearing performance of different bivoltine hybrids (pooled autumn season).
(Table 5.2.11)

[DataSet2] G:\raw data combined A in raw silk sav.sav

ANOVA

Raw silk

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1135.474	5	227.095	16.204	.000
Within Groups	336.360	24	14.015		
Total	1471.834	29			

Mean table of raw silk:

Sl No.	Name of the hybrid	Mean
01.	SLD4 XSLD8	29.96 a,b
02.	Gen3 X Gen2	25.62 c
03.	CSR2 XCSR4	26.088 b,c
04.	APS105xAPS126	24.75 c
05.	APS45xAPS12	33.36 a
06	CSR46xCSR47	30.23 a
SEd(±)		2.368
$CD_{.05}$		4.052

ANOVA reveales that the bivoltine hybrids are highly significant ($p<.01$) for the trait raw silk.

The ranking of the hybrids are shown in the above table.

1. **Conclusion** :

ANOVA— **Average raw silk**.

From ANOVA table, it is seen that there is highly significant difference among the different levels of hybrid with respect to the characteristic 'average raw silk' (pooled autumn season).

The nature of significant difference between the levels of hybrid with respect to the said characteristic is given below.

Vs	1	2	3	4	5	6
1	--	**	NS	**	*	NS
2	--	--	NS	NS	**	*
3	--	--	--	NS	**	*
4	--	--	--	--	**	**
5	--	--	--	--	--	NS
6	--	--	--	--	--	--

NS : Not significant

* : Difference is significant at .05 level

** : Difference is highly significant.

1. **Conclusion** :

ANOVA—**Average raw silk**.

From ANOVA table, it is seen that there is highly significant difference among the different levels of hybrid with respect to the characteristic 'average raw' (pooled autumn season).

A:Oneway on average reelability and rearing performance of different bivoltine hybrids (pooled autumn season).

(Table 5.2.12)

[DataSet2] G:\raw data combined A in reelability.sav

ANOVA

reelability

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1241.471	5	248.294	29.355	.000
Within Groups	203.003	24	8.458		
Total	1444.474	29			

Mean table of reelability:

Sl No.	Name of the hybrid	Mean
01.	SLD4 XSLD8	81.28 b
02.	Gen3 X Gen2	76.6,c
03.	CSR2 XCSR4	76.85 c
04.	APS105xAPS126	81.55 b
05.	APS45xAPS12	83.895 a,b
06	CSR46xCSR47	85.1 a
SEd(±)		1.839
$CD_{.05}$		3.147

ANOVA reveales that the bivoltine hybrids are highly significant ($p<.01$) for the trait reelability..

From the CD and SEd value we see that the hybrid CSR46 X CSR47,APS45 x APS12

are at par. rank of the hybrids are shown in the above table.

1. ANOVA—**Average reelability**.

From the ANOVA table, it is seen that there is highly significant difference among the different levels of hybrid with respect to the characteristic average reliability (pooled autumn season).

The nature of significant difference between the levels of hybrid with respect to the said characteristic is given below.

Vs	1	2	3	4	5	6
1	--	**	**	NS	NS	*
2	--	--	NS	**	**	**
3	--	--	--	**	**	**
4	--	--	--	--	NS	*
5	--	--	--	--	--	NS
6	--	--	--	--	--	--

NS : Not significant

* : Difference is significant at .05 level

** : Difference is highly significant.

A:Oneway on average neatness and rearing performance of different bivoltine hybrids (pooled autumn season).
(Table 5.2.13)

ANOVA

Neatness

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1562.000	5	312.400	1.084	.394
Within Groups	6919.200	24	288.300		
Total	8481.200	29			

ANOVA reveales that the bivoltine hybrids are not significant (p>.05) for the trait neatness.

1. **Conclusion :**

ANOVA—**Average neatness**.

From ANOVA table, it is observed that there no highly significant difference among the different levels of hybrid with respect to the characteristic 'average neatness' (pooled autumn season).

In this there is no need to study the nature of significant difference between the levels of hybrid with respect to the said characteristics.

A: Oneway on average boil-off and rearing performance of different bivoltine hybrids (pooled autumn season).
(Table 5.2.14)

ANOVA

Boil-off

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	235.619	5	47.124	7.856	.000
Within Groups	143.959	24	5.998		
Total	379.578	29			

Mean table of Boil-off:

Sl No.	Name of the hybrid	Mean
01.	SLD4 XSLD8	27.665 a,b
02.	Gen3 X Gen2	28.435 a
03.	CSR2 XCSR4	28.21 a
04.	APS105xAPS126	29.814 a
05.	APS45xAPS12	25.18 b
06	CSR46xCSR47	28.45 a
SEd(±)		1.549
$CD_{.05}$		2.65

ANOVA reveales that the bivoltine hybrids are highly significant ($p<.01$) for the trait boil off.

The ranking of the hybrids are shown in the above table.

1. ANOVA—**Average boil-off.**

From ANOVA Table, it is observed that there is highly significant difference among the different levels of bivoltine hybrid with respect to the characteristic 'average boil-off ' (pooled autumn season).

The nature of significant difference between the levels of hybrid with respect to the said characteristic is given below.

Vs	1	2	3	4	5	6
1	--	NS	NS	NS	*	NS
2	--	--	--	--	**	NS
3	--	--	--	NS	**	NS
4	--	--	--	--	**	NS
5	--	--	--	--	--	**
6	--	--	--	--	--	--

NS : Not significant

* : Difference is significant at .05 level

** : Difference is highly significant.

Correlation co-efficients of Bivoltine x Bivoltine hybrids (pooled autumn season):

Correlations

Simple correlation co-efficient between fecundity and other qualitative traits of First breed (SLD4xSLD8)(pooled autumn) (Table 5.2.15)

Correlations

		fecundity	hatching	Err by no.	Err by wt	Single cocoon wt	Single shell wt	shell ratio	Yield per 100 dfls
fecundity	Pearson Correlation	1	.658	-.890*	-.877	-.768	-.334	.815	-.779
	Sig. (2-tailed)		.228	.043	.051	.130	.583	.093	.121
	N	5	5	5	5	5	5	5	5
hatching	Pearson Correlation	.658	1	-.379	-.605	-.696	-.077	.802	-.651
	Sig. (2-tailed)	.228		.529	.280	.192	.902	.103	.234
	N	5	5	5	5	5	5	5	5
Err by no.	Pearson Correlation	-.890*	-.379	1	.758	.636	.406	-.483	.596
	Sig. (2-tailed)	.043	.529		.138	.249	.498	.410	.289
	N	5	5	5	5	5	5	5	5
Err by wt	Pearson Correlation	-.877	-.605	.758	1	.960**	.715	-.851	.974**
	Sig. (2-tailed)	.051	.280	.138		.009	.174	.068	.005
	N	5	5	5	5	5	5	5	5
Single cocoon wt	Pearson Correlation	-.768	-.696	.636	.960**	1	.751	-.825	.980**
	Sig. (2-tailed)	.130	.192	.249	.009		.144	.086	.003
	N	5	5	5	5	5	5	5	5
Single shell wt	Pearson Correlation	-.334	-.077	.406	.715	.751	1	-.352	.738
	Sig. (2-tailed)	.583	.902	.498	.174	.144		.562	.155
	N	5	5	5	5	5	5	5	5
shell ratio	Pearson Correlation	.815	.802	-.483	-.851	-.825	-.352	1	-.885*
	Sig. (2-tailed)	.093	.103	.410	.068	.086	.562		.046
	N	5	5	5	5	5	5	5	5
Yield per 100 dfls	Pearson Correlation	-.779	-.651	.596	.974**	.980**	.738	-.885*	1
	Sig. (2-tailed)	.121	.234	.289	.005	.003	.155	.046	
	N	5	5	5	5	5	5	5	5

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Conclusion: Significance of C.C between the qualitative characteristics (trails) of **first breed** under (pooled autumn)

Description : The coefficient of correlation(C.C) are calculated on the basis of pearson's coefficient of correlation and the significance of the C.C between the various characteristics are based on t-test (Two tailed) . Again the **N.H.** is considered as

Ho : ρ=O, i.e. the correlation coefficient is not significant.

From, the calculation of C.C and on the basis of the calculated value of ItI, the following table indicate the levels of significance of C.C between various qualitative characteristics as

level	1	2	3	4	5	6	7	8
1	--	NS	Sig(*)	NS	NS	NS	NS	NS
2	NS	--	NS	NS	NS	NS	NS	NS
3	Sig(*)	NS	--	NS	NS	NS	NS	NS
4	NS	NS	NS	--	Sig(**)	NS	NS	Sig(**)
5	NS	NS	NS	Sig(**)	--	NS	NS	Sig(**)
6	NS	NS	NS	NS	NS	--	NS	NS
7	NS	NS	NS	NS	NS	NS	--	Sig(*)
8	NS	NS	NS	Sig(**)	Sig(**)	NS	Sig(*)	--

NS : Not significant
Sig(*) : Significant at .05 level
Sig(**) : Highly significant (both at .05 and .01 levels).

From the above it is observed that the C.C between the characteristics.

i) Fecundity and effective rate of rearing by number is significant.

ii) effective rate of rearing by weight and single cocoon weight is highly significant.

iii) Error by weight and yield is highly significant.

iv) Shell ratio (SR) and yield is highly significant.

Correlations

Simple correlation co-efficient between fecundity and other qualitative traits of second breed (Gen3x Gen2)(pooled autumn) (Table 5.2.16)

correlations

		fecundity	hatching	errbyno	errbywt	sgcocnwt	sgshlwt	SR	yield
fecundity	Pearson Correlation	1	-.796	-.385	-.544	-.556	-.266	.181	-.544
	Sig. (2-tailed)		.107	.522	.343	.330	.666	.770	.343
	N	5	5	5	5	5	5	5	5
hatching	Pearson Correlation	-.796	1	.121	.179	.512	.747	.383	.179
	Sig. (2-tailed)	.107		.846	.773	.377	.147	.524	.773
	N	5	5	5	5	5	5	5	5
errbyno	Pearson Correlation	-.385	.121	1	-.269	-.518	.053	-.728	-.269
	Sig. (2-tailed)	.522	.846		.661	.371	.932	.163	.661
	N	5	5	5	5	5	5	5	5
errbywt	Pearson Correlation	-.544	.179	-.269	1	.852	-.348	-.166	1.000**
	Sig. (2-tailed)	.343	.773	.661		.067	.567	.789	.000
	N	5	5	5	5	5	5	5	5
sgcocnwt	Pearson Correlation	-.556	.512	-.518	.852	1	.098	.345	.852
	Sig. (2-tailed)	.330	.377	.371	.067		.876	.570	.067
	N	5	5	5	5	5	5	5	5
sgshlwt	Pearson Correlation	-.266	.747	.053	-.348	.098	1	.587	-.348
	Sig. (2-tailed)	.666	.147	.932	.567	.876		.298	.567
	N	5	5	5	5	5	5	5	5
SR	Pearson Correlation	.181	.383	-.728	-.166	.345	.587	1	-.166
	Sig. (2-tailed)	.770	.524	.163	.789	.570	.298		.789
	N	5	5	5	5	5	5	5	5
yield	Pearson Correlation	-.544	.179	-.269	1.000**	.852	-.348	-.166	1
	Sig. (2-tailed)	.343	.773	.661	.000	.067	.567	.789	
	N	5	5	5	5	5	5	5	5

**. Correlation is significant at the 0.01 level (2-tailed).

Significance of C.C between the qualitative trails of **2nd breed** under Pooled autumn season.

Description: The coefficient of correlation(C.C) are calculated on the basis of pearson's coefficient of correlation and the significance of the C.C between the various characteristics are based on t-test (Two tailed). Again the **N.H.** is considered as

Ho : ρ=O, i.e. the correlation coefficient is not significant.

From, the calculation of C.C and on the basis of the calculated value of ItI , the following table indicate the levels of significance of C.C between various qualitative characteristics as

level	1	2	3	4	5	6	7	8
1	--	NS	NS	NS	NS	NS	NS	NS
2	NS	--	NS	NS	NS	NS	NS	NS
3	NS	NS	--	NS	NS	NS	NS	NS
4	NS	NS	NS	--	NS	NS	NS	Sig(**)
5	NS	NS	NS	NS	--	NS	NS	NS
6	NS	NS	NS	NS	NS	--	NS	NS
7	NS	NS	NS	NS	NS	NS	--	NS
8	NS	NS	NS	Sig(**)	NS	NS	NS	--

NS : Not significant

Sig(*) : Significant at .05 level

Sig(**) : Highly significant (both at .05 and .01 levels).

From the above results, it is observed that only the C.C between the characteristics effective rate of rearing by weight and yield is highly significant.

Correlations

Simple correlation co-efficient between fecundity and other qualitative traits of 3rd breed(CSR2x CSR4)(pooled autumn) (Table 5.2.17)

		fecundity	hatching	Err by no.	Err by weight	Single cocoon wt	Single shell wt	SR%	Yield per 100 dfls
fecundity	Pearson Correlation	1	.133	.282	.089	-.487	-.380	.328	.089
	Sig. (2-tailed)		.831	.645	.886	.405	.528	.590	.886
	N	5	5	5	5	5	5	5	5
hatching	Pearson Correlation	.133	1	-.020	-.391	-.774	-.227	.581	-.391
	Sig. (2-tailed)	.831		.974	.515	.124	.713	.304	.515
	N	5	5	5	5	5	5	5	5
Err by no.	Pearson Correlation	.282	-.020	1	.814	.352	.769	.777	.814
	Sig. (2-tailed)	.645	.974		.094	.561	.129	.122	.094
	N	5	5	5	5	5	5	5	5
Err by weight	Pearson Correlation	.089	-.391	.814	1	.699	.728	.319	1.000**
	Sig. (2-tailed)	.886	.515	.094		.189	.163	.600	.000
	N	5	5	5	5	5	5	5	5
Single cocoon wt	Pearson Correlation	-.487	-.774	.352	.699	1	.723	-.233	.699
	Sig. (2-tailed)	.405	.124	.561	.189		.168	.706	.189
	N	5	5	5	5	5	5	5	5
Single shell wt	Pearson Correlation	-.380	-.227	.769	.728	.723	1	.470	.728
	Sig. (2-tailed)	.528	.713	.129	.163	.168		.425	.163
	N	5	5	5	5	5	5	5	5
SR%	Pearson Correlation	.328	.581	.777	.319	-.233	.470	1	.319
	Sig. (2-tailed)	.590	.304	.122	.600	.706	.425		.600
	N	5	5	5	5	5	5	5	5
Yield per 100 dfls	Pearson Correlation	.089	-.391	.814	1.000**	.699	.728	.319	1
	Sig. (2-tailed)	.886	.515	.094	.000	.189	.163	.600	
	N	5	5	5	5	5	5	5	5

**. Correlation is significant at the 0.01 level (2-tailed).

Significance of C.C between the qualitative trails of **3rd breed** (CSR2XCSR4) under pooled autumn season.

Description : The coefficient of correlation(C.C) are calculated on the basis of pearson's coefficient of correlation and the significance of the C.C between the various characteristics are based on t-test (Two tailed) . Again the **N.H.** is considered as

Ho : ρ=O, i.e. the correlation coefficient is not significant.

From, the calculation of C.C and on the basis of the calculated value of ItI , the following table indicate the levels of significance of C.C between various qualitative characteristics as

level	1	2	3	4	5	6	7	8
1	--	NS	NS	NS	NS	NS	NS	NS
2	NS	--	NS	NS	NS	NS	NS	NS
3	NS	NS	--	NS	NS	NS	NS	NS
4	NS	NS	NS	--	NS	NS	NS	Sig(**)
5	NS	NS	NS	NS	--	NS	NS	NS
6	NS	NS	NS	NS	NS	--	NS	NS
7	NS	NS	NS	NS	NS	NS	--	NS
8	NS	NS	NS	Sig(**)	NS	NS	NS	--

NS : Not significant

Sig(*) : Significant at .05 level

Sig(**) : Highly significant (both at .05 and .01 levels).

From above, it is observed that the C.C between the characteristics effective rate of rearing by weight and yield is highly significant & all others are significant.

Correlations

Simple correlation co-efficient between fecundity and other qualitative traits of 4th breed(APS105 xAPS126)(pooled autumn) (Table 5.2.18)

Correlations

		fecundity	hatching	Err by no.	Err by wt	Single cocoon wt	Single shell wt	SR%	Yield per 100 dfls
fecundity	Pearson Correlation	1	-.818	.372	.705	.087	-.223	-.467	.705
	Sig. (2-tailed)		.090	.538	.183	.890	.719	.428	.183
	N	5	5	5	5	5	5	5	5
hatching	Pearson Correlation	-.818	1	-.005	-.271	.397	.344	.215	-.271
	Sig. (2-tailed)	.090		.994	.659	.508	.571	.728	.659
	N	5	5	5	5	5	5	5	5
Err by no.	Pearson Correlation	.372	-.005	1	.898*	.026	-.616	-.835	.898*
	Sig. (2-tailed)	.538	.994		.038	.967	.269	.079	.038
	N	5	5	5	5	5	5	5	5
Err by wt	Pearson Correlation	.705	-.271	.898*	1	.236	-.414	-.805	1.000**
	Sig. (2-tailed)	.183	.659	.038		.702	.489	.100	.000
	N	5	5	5	5	5	5	5	5
Single cocoon wt	Pearson Correlation	.087	.397	.026	.236	1	.743	.027	.236
	Sig. (2-tailed)	.890	.508	.967	.702		.150	.965	.702
	N	5	5	5	5	5	5	5	5
Single shell wt	Pearson Correlation	-.223	.344	-.616	-.414	.743	1	.456	-.414
	Sig. (2-tailed)	.719	.571	.269	.489	.150		.440	.489
	N	5	5	5	5	5	5	5	5
SR%	Pearson Correlation	-.467	.215	-.835	-.805	.027	.456	1	-.805
	Sig. (2-tailed)	.428	.728	.079	.100	.965	.440		.100
	N	5	5	5	5	5	5	5	5
Yield per 100 dfls	Pearson Correlation	.705	-.271	.898*	1.000**	.236	-.414	-.805	1
	Sig. (2-tailed)	.183	.659	.038	.000	.702	.489	.100	
	N	5	5	5	5	5	5	5	5

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Significance of C.C between the qualitative trails of **4th breed (APS105 x APS12)** under pooled autumn season.

Description : The coefficient of correlation(C.C) are calculated on the basis of Pearson's coefficient of correlation and the significance of the C.C between the various characteristics are based on t-test (Two tailed). Again the N.H. is considered as

Ho : ρ=O, i.e. the correlation coefficient is not significant.

From, the calculation of C.C and on the basis of the calculated value of ItI, the following table indicate the levels of significance of C.C between various qualitative characteristics as

level	1	2	3	4	5	6	7	8
1	--	NS	NS	NS	NS	NS	NS	NS
2	NS	--	NS	NS	NS	NS	NS	NS
3	NS	NS	--	Sig(**)	NS	NS	NS	Sig(**)
4	NS	NS	Sig(**)	--	NS	NS	NS	Sig(**)
5	NS	NS	NS	NS	--	NS	NS	NS
6	NS	NS	NS	NS	NS	--	NS	NS
7	NS	NS	NS	NS	NS	NS	--	NS
8	NS	NS	Sig(**)	Sig(*)	NS	NS	NS	--

NS : Not significant

Sig(*) : Significant at .05 level

Sig(**) : Highly significant (both at .05 and .01 levels).

From the above, it is observed that the coefficient of correlation between the characteristics .

i) Effective rate of rearing by number and effective rate of rearing by weight is significant.

ii) Effective rate of rearing by number and yield is highly significant

iii) Effective rate of rearing by weight and yield is highly significant.

Correlations

Simple correlation co-efficient between fecundity and other qualitative traits of 5th breed(APS45xAPS12)(pooled autumn) (Table 5.2.19)

Correlations

		Fecundity	Hat%	Err by no	Err by wt	S.C.wt.	S.Shell Wt.	SR%	Yield/100dfs
Fecundity	Pearson Correlation	1	-.743	-.892*	-.225	-.161	-.289	.491	-.231
	Sig. (2-tailed)		.151	.042	.716	.796	.637	.401	.709
	N	5	5	5	5	5	5	5	5
Hat%	Pearson Correlation	-.743	1	.620	-.474	-.514	-.376	-.421	-.467
	Sig. (2-tailed)	.151		.265	.419	.375	.532	.480	.428
	N	5	5	5	5	5	5	5	5
Err by no	Pearson Correlation	-.892*	.620	1	.322	.121	.467	-.078	.338
	Sig. (2-tailed)	.042	.265		.598	.847	.427	.901	.578
	N	5	5	5	5	5	5	5	5
Err by wt	Pearson Correlation	-.225	-.474	.322	1	.942*	.973**	.035	1.000**
	Sig. (2-tailed)	.716	.419	.598		.016	.005	.955	.000
	N	5	5	5	5	5	5	5	5
S.C.wt.	Pearson Correlation	-.161	-.514	.121	.942*	1	.848	-.220	.933*
	Sig. (2-tailed)	.796	.375	.847	.016		.069	.722	.021
	N	5	5	5	5	5	5	5	5
S.Shell Wt.	Pearson Correlation	-.289	-.376	.467	.973**	.848	1	.153	.979**
	Sig. (2-tailed)	.637	.532	.427	.005	.069		.806	.004
	N	5	5	5	5	5	5	5	5
SR%	Pearson Correlation	.491	-.421	-.078	.035	-.220	.153	1	.055
	Sig. (2-tailed)	.401	.480	.901	.955	.722	.806		.931
	N	5	5	5	5	5	5	5	5
Yield/100dfs	Pearson Correlation	-.231	-.467	.338	1.000**	.933*	.979**	.055	1
	Sig. (2-tailed)	.709	.428	.578	.000	.021	.004	.931	
	N	5	5	5	5	5	5	5	5

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Significance of C.C between the qualitative trails of **5th breed** under pooled autumn.

Description: The coefficient of correlation(C.C) are calculated on the basis of Pearson's coefficient of correlation and the significance of the C.C between the various characteristics are based on t-test (Two tailed) . Again the N.H. is considered as

Ho : ρ=O, i.e. the correlation coefficient is not significant.

From, the calculation of C.C and on the basis of the calculated value of ItI , the following table indicate the levels of significance of C.C between various qualitative characteristics as

level	1	2	3	4	5	6	7	8
1	--	NS	Sig(*)	NS	NS	NS	NS	NS
2	NS	--	NS	NS	NS	NS	NS	NS
3	Sig(*)	NS	--	NS	NS	NS	NS	NS
4	NS	NS	NS	--	Sig(*)	Sig(**)	NS	Sig(**)
5	NS	NS	NS	Sig(*)	--	NS	NS	Sig(**)
6	NS	NS	NS	Sig(**)	NS	--	NS	Sig(**)
7	NS	NS	NS	NS	NS	NS	--	NS
8	NS	NS	NS	Sig(**)	Sig(**)	Sig(**)	NS	--

NS : Not significant

Sig(*) : Significant at .05 level

Sig(**) : Highly significant (both at .05 and .01 levels).

From the above, it is observed that the coefficient of corral between the following traits.

i) Fecundity and effective rate of rearing by number is significant.

ii) Effective rate of rearing by weight and Sc. weight is significant

iii) Effective rate of rearing by weight and single shell weight is highly significant

iv) Err by wt and yield is highly significant

v) S.C. and yield is highly significant.

Correlations

Simple correlation co-efficient between fecundity and other qualitative traits of 6th breed(CSR46 xCSR47)(pooled autumn) (Table 5.2.20)

Correlations

		fecundity	hatching	Err by no.	Err by wt	Single cocoon wt	Single shell wt	SR%	yield per 100 dfls
fecundity	Pearson Correlation	1	.802	.463	.575	.061	.878	.920*	.575
	Sig. (2-tailed)		.103	.432	.310	.923	.050	.027	.310
	N	5	5	5	5	5	5	5	5
hatching	Pearson Correlation	.802	1	.161	.618	.363	.777	.558	.618
	Sig. (2-tailed)	.103		.796	.266	.549	.122	.329	.266
	N	5	5	5	5	5	5	5	5
Err by no.	Pearson Correlation	.463	.161	1	.671	.045	.308	.544	.671
	Sig. (2-tailed)	.432	.796		.215	.942	.614	.343	.215
	N	5	5	5	5	5	5	5	5
Err by wt	Pearson Correlation	.575	.618	.671	1	.711	.714	.577	1.000**
	Sig. (2-tailed)	.310	.266	.215		.178	.176	.308	.000
	N	5	5	5	5	5	5	5	5
Single cocoon wt	Pearson Correlation	.061	.363	.045	.711	1	.473	.103	.711
	Sig. (2-tailed)	.923	.549	.942	.178		.421	.869	.178
	N	5	5	5	5	5	5	5	5
Single shell wt	Pearson Correlation	.878	.777	.308	.714	.473	1	.884*	.714
	Sig. (2-tailed)	.050	.122	.614	.176	.421		.047	.176
	N	5	5	5	5	5	5	5	5
SR%	Pearson Correlation	.920*	.558	.544	.577	.103	.884*	1	.577
	Sig. (2-tailed)	.027	.329	.343	.308	.869	.047		.308
	N	5	5	5	5	5	5	5	5
yield per 100 dfls	Pearson Correlation	.575	.618	.671	1.000**	.711	.714	.577	1
	Sig. (2-tailed)	.310	.266	.215	.000	.178	.176	.308	
	N	5	5	5	5	5	5	5	5

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

significance of C.C between the qualitative trails of **6th breed** under pooled autumn season.

Description : The coefficient of correlation(C.C) are calculated on the basis of Pearson's coefficient of correlation and the significance of the C.C between the various characteristics are based on t-test (Two tailed) . Again the **N.H.** is considered as

Ho : ρ=O, i.e. the correlation coefficient is not significant.

From, the calculation of C.C and on the basis of the calculated value of ItI , the following table indicate the levels of significance of C.C between various qualitative characteristics as

level	1	2	3	4	5	6	7	8
1	--	NS	NS	NS	NS	NS	Sig(*)	NS
2	NS	--	NS	NS	NS	NS	NS	NS
3	NS	NS	--	NS	NS	NS	NS	NS
4	NS	NS	NS	--	NS	NS	NS	Sig(**)
5	NS	NS	NS	NS	--	NS	NS	NS
6	NS	NS	NS	NS	NS	--	Sig(*)	NS
7	Sig(*)	NS	NS	NS	NS	Sig(*)	--	NS
8	NS	NS	Sig(**)	Sig(*)	NS	NS	NS	--

NS : Not significant

Sig(*) : Significant at .05 level

Sig(**) : Highly significant (both at .05 and .01 levels).

From the above results, It can be conclude that the C.C between the traits.

i) Fecundity and SR is significant.

ii) Effective rate of rearing by weight and yield is highly significant.

iii) Single shell weight and SR is significant.