

The bivoltine silkworm breeds developed earlier were with an objective to have higher pupation rate and all the other characters balanced at a moderate level for enabling easy rearing by the farmers. Therefore, limited hybrid vigour could be realized when two such breeds are crossed because both the breeds are on par in almost all the characters. This is one of the reasons for lack of productive bivoltine hybrids in India. Therefore, in CSR&TI, Mysore in collaboration with Japan International cooperation Agency (JICA) Phase I (1991-97) new breeding programmes were formulated for the development of productive hybrids by using Japanese hybrids as breeding resource materials. This has resulted in the evolution of a series of productive bivoltine breeds with high survival and cocoon shell percentage. By systematic evaluation of large number of crosses involving these parents, the productive hybrid namely CSR2 x CSR4, CSR2 x CSR5, and CSR16 x CSR17 etc; with cocoon shell percentage of 23-24%; raw silk recovery of 18-19 % and 2A- 3A grade silk were developed. Significant improvement was noticed in raw silk recovery, filament length and renditta in all these new hybrids. These hybrids were authorized by Central Silk Board after the National level hybrid authorization test and recommended for rearing in favorable months with farmers having mulberry garden of V1 variety with assured irrigation and adopting the recommended rearing technology package.

### Performance of productive hybrids in laboratory

Hybrids	Pupation (%)	Cocoon Yield/10,000 larvae (kg)	Cocoon weight (g)	Shell weight (g)	Shell (%)	Raw silk (%)	Filament length (m)	Neatness (p)
CSR2 x CSR4	95.6	19.14	2.01	0.472	23.5	18.5	1050	94
CSR2 x CSR5	97.1	18.26	1.99	0.474	23.8	17.9	1035	93
CSR16 x CSR17	96.4	19.65	2.06	0.486	23.6	18.6	1075	94

The hybrid CSR2 x CSR4 is being utilized by the farmers in a big way in the south India for commercial purpose. The hybrid was successfully popularized in the three states of Karnataka, Andhra Pradesh and Tamil Nadu under the technical guidance of JICA (Phase II- 1997-2001 and Phase III -2002-2007) and in co-operation with Department of Sericulture (DoS). Moreover, the same hybrid was also tested in Institute Village Linkage Programme (IVLP) and Cluster Promotion Programme (CPP) and the results are encouraging with cocoon yield of more than 65 kg /100 dfls.

### Salient features of CSR2 x CSR4

- Rearing during favourable months in southern states.
- Productive hybrid and easy to handle by farmers under hygienic conditions
- Hybrid with high cocoon shell ratio (22-24%) and raw silk recovery (19-20%)
- Plain larvae with bluish white body colour
- Cocoons are bright white with intermediate shape and medium grains
- Better return for cocoon producer and reeler
- Cocoon yield 65-70kg /100 dfls
- Better fibre quality (2A~3A)
- Renditta : 5.6 to 6.1

## Field performance of CSR2 x CSR4

### JICA Phase I: (1997-2001)

A total quantity of 2,87,587 dfls of CSR2 x CSR4 were tested in seventeen trials with 1424 farmers at different locations of Karnataka, Tamil Nadu and Andhra Pradesh and the hybrid recorded an average cocoon yield of 66.5kg /100 dfls.

### JICA Phase II: (2002-2007)

A total quantity of 52,69,000 dfls of CSR2 x CSR4 were tested with 3698 farmers at different locations of Karnataka, Tamil Nadu and Andhra Pradesh and the hybrid recorded an average cocoon yield of 65.7kg /100 dfls.

The authorized productive hybrid, CSR16 x CSR17 is under large scale testing under post authorization test among the farmers of Karnataka, Andhra Pradesh, Tamil Nadu and Maharashtra and the hybrid is gaining popularity among the sericulturists.



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# CSR2 x CSR4

## PRODUCTIVE BIVOLTINE HYBRID



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