

Salient Features

- ❖ Robust Breed
- ❖ Suitable for rearing in both favourable & unfavourable seasons
- ❖ Higher survival & fecundity
- ❖ Marked & Plain larvae
- ❖ Single cocoon weight: 1.1- 1.2 g
- ❖ Single shell weight: 0.14- 0.16 g
- ❖ Shell Ratio (%): 12-15.
- ❖ Filament Length: 350- 450m



ADVANTAGES

- ✓ Uniform Larval Growth
- ✓ Higher Cocoon & Shell Weight
- ✓ High Survival
- ✓ Tolerant to High Temperature & Humidity
- ✓ Longer Filament Length
- ✓ Tolerance to BmNPV

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CSRTI

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IMPROVED NISTARI LINES

Higher Survival & Silk Productivity



Mulberry raw silk of about 2500 MT produced in Eastern & North-Eastern India is achieved mainly by rearing Multi x Bivoltine silkworms, especially Nistari x BV breeds (92%) .

This is due to various agro-climatic and socio-economic condition, besides being traditional practice especially in West Bengal. Nistari is one of the Indian land races being reared for several decades in the region. Continuous exploitation and not-so-proper maintenance has resulted in accumulation of several demerits in Nistari lines with farmers.

- reduction in general survival
- low productivity
- poor crop stability in adverse seasons
- low silk filament characteristics

To address the field constraints and mitigate productivity issues in the field, CSRTI-Berhampore has undertaken an R&D project in 2019-20. The envisaged goals include improved for homozygosis (cocoon shape, volume & built) and improved productivity.

The improvement in productivity was by following directional selection for fecundity, pupation rate, cocoon & shell weight and filament Length. Maintenance of Nistari populations (broods) tolerant to BmNPV, high temperature and high relative humidity were the method employed for improving the general survival.

Comparative Laboratory Performance

Trait	Plain Lines		Marked Lines	
	Regular Nistari	Improved Nistari	Regular Nistari	Improved Nistari
Fecundity (No)	382-390	451-467	392-400	507-523
Pupation Rate (%)	86-88	95-97	81-83	96-97
Single Cocoon Wt. (g)	0.9-1.21	1.11-1.12	0.9-1.1	1.24-1.25
Shell Wt. (g)	0.1-0.125	0.13-0.15	0.1-0.115	0.16-0.20
Shell Ratio (%)	11-12.5	11.49-13.46	11-12	13.72-14.84
Filament Length (m)	300-350	370-388	300-350	384-429

The broods of improved Nistari lines were subjected to BmNPV exposure (Grasserie) by per oral inoculation. BmNPV tolerant populations have completed five generations and exhibit considerable improvement in survival. BmNPV tolerant populations are being maintained for further utilization in generating seed cocoons for Nistari crossbreeds.

BmNPV Tolerance in Improved Nistari Lines @60000 PIBs/larvae (III instar)

Seasons	Marked	Plain
June-July 2020	65-70	20-21
Aug- Sept 2020	38-41	22-56
Oct- Nov 2020	55-56	37-51
Dec-Jan 2021	75-78	76-79
Feb - March 2021	75-77	72-74

Directional selection was employed for identifying broods with higher fecundity, pupation rate, cocoon weight, shell weight and shell ratio. These improved Nistari lines were reeled employing cold reeling for identifying cocoons with longer filament length for successive generations in different seasons.

Performance of Improved Nistari Lines (Mean of 9 crops)

Trait	Marked		Plain	
	Value	CV (%)	Value	CV (%)
Fecundity (No)	516	4.81	460	8.59
Pupation Rate (%)	96.00	1.72	95.00	1.50
Cocoon Wt. (g)	1.24	12.59	1.12	7.36
Shell Wt. (g)	0.19	15.79	0.14	14.29
Shell Ratio (%)	14.56	5.08	12.11	12.39
Filament Length (m)	420	5.92	385	7.49