

The field evaluation was performed in the states of Karnataka and Andhra Pradesh during the summer and rainy seasons. These locations were selected because it was observed that the summer season favours viral infections in Andhra Pradesh and the rainy season favours flacherie disease in Karnataka. The overall requirement of the RDIN1 hybrid was to have no silkworm crop loss due to viral infections in unfavourable seasons and a better cocoon yield in comparison with the popular double hybrid FC1 x FC2.

The multi-viral disease-tolerant bivoltine silkworm double hybrid, RDIN1, developed through marker-assisted selection showed survival >72% compared to the control double hybrid, FC1 x FC2, under inoculated conditions. The field evaluation of RDIN1 was assessed by rearing 20,000 layings at different locations in Karnataka and Andhra Pradesh during the summer and rainy seasons. RDIN1 had better pupation (94.8%), compared to FC1 x FC2 (91.5%) at the farmers' level, with a 4% improvement. The average cocoon yield of RDIN1 (71.2Kg) was better compared to FC1 x FC2 (69.3Kg) in unfavourable conditions.



Salient features of RDIN1

- Multi-viral disease tolerant double hybrid
- Easy to rear by farmers
- Suitable for rearing in all seasons
- Better returns for cocoon producers
- Cocoon yield: 65-70 kg/100 dfls
- Cocoon shell ratio: 21-22%
- Reelability: > 86 %
- Neatness: 94p
- Renditta: 6.0



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RDIN1: A new bivoltine double hybrid tolerant to multi-viral disease



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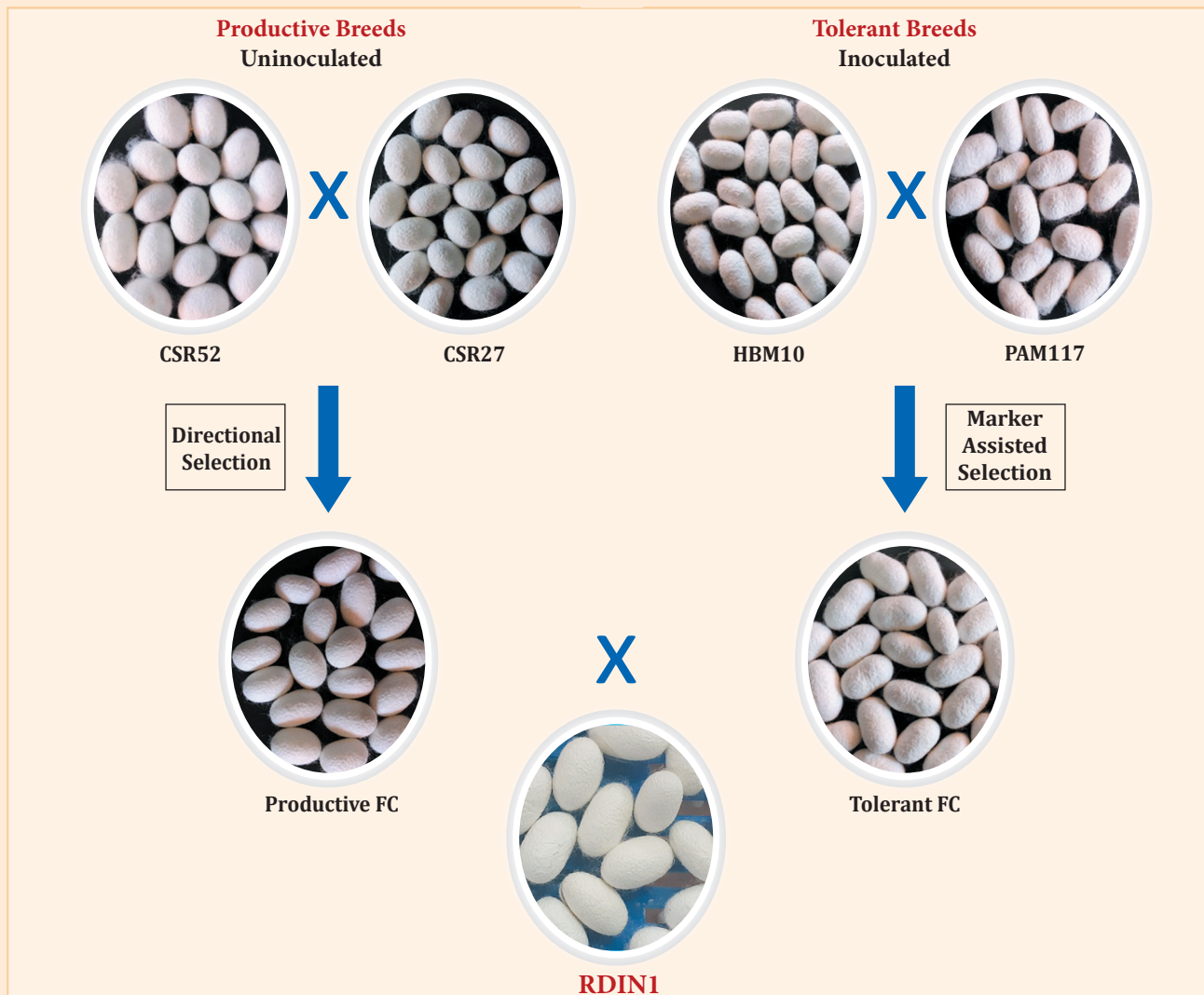
RDIN1 is a multi-viral disease-tolerant bivoltine silkworm double hybrid with higher survivability and cocoon yield compared to FC1 x FC2. The hybrid is tolerant to *Bombyx mori* Densonucleosis virus (BmDV), *Bombyx mori* Infectious flacherie virus (BmIFV), and *Bombyx mori* nuclear polyhedrosis virus (BmNPV).

With climate change, the evolution of silkworm diseases and outbreaks of silkworm disease are evident, especially in tropical country like India. The tropical conditions are highly favourable for the survival of pathogens causing diseases in silkworms, their multiplication and infection of the silkworms, paving the way for epizootic conditions. This often results in enormous economic losses for the silk industry. Viral diseases are prevalent and are one of the major constraints in almost all the sericultural areas in India. The diseases caused by viruses such as BmNPV (Grasserie), BmDV and BmIFV (Flacherie) are more common and account for nearly 70% of reported crop losses.

To overcome the problem of silkworm diseases and crop losses, many management strategies have been developed and practiced over a period of time. The practice of disinfection, personal and rearing hygiene, the crop failures continue to hamper the cocoon production and productivity among farmers.

To overcome the adverse effect posed by multi-viral infection to silkworms, a multi-viral tolerant bivoltine silkworm hybrid was developed through marker-assisted selection by pyramiding resistance and tolerance genes utilizing SSR markers which include -

Isocitrate dehydrogenase (IDH216), Glucose dehydrogenase (GDH306), Lipase (LIP283), Protein tyrosine phosphatase (PTP284), Attacin (ATT), Ankyrin (ANK165), Alkaline tyrosine kinase (ATK285) and Dipeptidyl peptidase (DPP150).



Performance of multi-viral diseases tolerant bivoltine double hybrid RDIN1 at Farmers' level						
Season	Hybrid	Pupation (%)	Cocoon Yield (kg/100 dfls)	SCW (g)	SSW (g)	SR (%)
Rainy	RDIN1	94.06	71.26	1.872	0.405	21.63
	FC1 x FC2	92.33	69.32	1.659	0.356	21.45
	SEm±	0.13	0.09	0.002	0.001	0.03
Summer	RDIN1	94.87	71.23	1.794	0.388	21.62
	FC1 x FC2	91.52	69.35	1.707	0.354	20.71
	SEm±	0.18	0.13	0.003	0.001	0.04