CYR-3484: EVALUATION OF SILKWORM GENETIC RESOURCES FOR POST COCOON TRAITS

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Introduction:

Raw silk or post cocoon characteristics are important from the point of view of reelers. Therefore, breeders and research institutes engaged in developing silkworm breeds that yield better quality cocoons for commercial exploitation, need basic information about the accessions for selection of parents. Of late, sericin and fibroin, the two proteins in natural silk are gaining extensive research attention due to the fact that these two proteins have unconventional technical and biomedical applications because of their bio compatibility and bio-degradablity. In view of the fact that the protein content in silkworm accessions is variable, the evaluation of sericin and fibroin content in the silkworm accessions becomes very important.

Objectives:

- To evaluate conserved silkworm genetic resources for post cocoon traits
- To identify donor parents for specific post cocoon traits

Outcome:

- BBI-363 has longest filament length (975.5m), maximum raw silk percentage (16.25%) and renditta is the least at 6.15. Reelability varies from 84.6% to 93.8 %.
- BMI-0079 has the maximum neatness (86%) and minimum evenness variation (60 stripes). Boil-off loss varies from 21.5% to 25.3%.
- Sericin content was found high in bivoltine and to vary from from 18.6 to 35.0 % and 20.1 to 32.0 % in multivoltines races evaluated.
- Mutant races showed higher average fibroin content whereas, bivoltine races showed variation from 64.00% to 81.34%.

#	Silkworm Type	Multivoltine	Mutants	Bivoltine
	No. of accessions	73	19	178
SERICIN CONTENT (%)				
1	Average	26.43	26.00	27.38
2	Minimum value	20.14	21.04	18.63
3	Maximum value	31.96	32.34	35.01
FIBROIN CONTENT (%)				
1	Average	73.55	74.00	72.62
2	Minimum value	68.04	67.66	64.99
3	Maximum value	79.86	78.96	81.37

Recommendations/Utilization

- ✓ The list of the top performing accessions on post-cocoon parameters have been catalogued which can be selected as parents for breeding experiments, depending on the characters preferred.
- ✓ Longer filament length and NBFL, higher reelability and raw silk recovery and a lower renditta would improve the productivity and economics of reeling, finer denier would produce better quality with respect to evenness of raw silk.
- ✓ A higher value for neatness, Cleanness, Tenacity, Elongation and cohesion and a lower number for evenness are preferred for superior grades of raw silk. Also, a higher boil-off loss would decrease the value of raw silk. While selecting parents for breeding experiments these parameters should be kept in mind for better reeling performance, better economics as well as better quality of raw silk.