Silk Association of India (SAI)
NEWSLETTER

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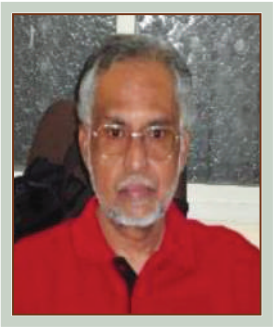
From the President's Desk.....

Pebrine Disease will Destroy Karnataka's Sericulture if not Controlled Immedaitely



Sericulture is an important cottage industry in Karnataka benefiting nearly 3 lakh rural families from cultivating mulberry to silk weaving. Introduced by Tippu Sultan 250 years ago, later, Sir M Visvesvaraiah was convinced that, this cottage industry will change rural economy. Government's protection ensured sericulture prosperity in Karnataka, producing nothing two centuries ago to nearly 80% of India's silk in 1980s.

Now severe Pebrine infection is reported in Mysore seed area and Karnataka's silk industry will be wiped out within another year, if it is not immediately controlled. There is no cure for Pebrine disease and the affected silkworms, cocoons and silkworm eggs have to be destroyed as Pebrine is transmitted to the next generation through female parent. This drastic measure was first found out by the great French scientist Louis Pasteur, the father of Microbiology, in 19th century, who also invented vaccines for rabies and pasteurization (heat treatment) for milk, wine and beer. It is because of Pebrine disease, sericulture disappeared from France, Italy and other European countries and to save our silk industry from such a catastrophe, Pebrine detection, destruction of infected batches and mass disinfections should be taken up on war footing. It is tragic that the Sericulture Department is not taking it seriously and allowing the conditions to worsen and intensify beyond our control. This is only waiting to happen because officials are in a state of denial that there is no Pebrine disease and are giving fabricated reports to the Commissioner. We may recall the rampant incidence of Pebrine in Karnataka during 1991 and how it was contained with a mission mode approach. Needless to emphasize that only a similar approach could save our silk industry and come to the rescue of millions of stakeholders solely depending on it.

The major concern is about the man power crunch to handle such a grievous situation. Previously, the sericulture department had 6000 employees and skilled staff. 70% of the staff have retired and the remaining will go in another 5 years. Right now, only 1600 personnel work in the department. There were no recruitments in the past 20 years. Thus, there is a shortage of moth testers and skilled workers. On the other side, only a handful of scientists in State and Central government research institutes and hence are in the process of closure. In many meetings with the Hon'ble Minister and Commissioner for Sericulture, the Silk Association of India has emphasized the need for filling up vacancies. At least now, both the State and Central governments must recruit scientists and specialists to save the silk industry and take steps to support the overall development of the silk industry. It is a matter of great concern that, much attention is not paid by all the agencies together to control the disease, when the time is ripe to take advantage of the decreasing silk production in mighty China.

V Balasubramanian, IAS (Retd)

SAI Webinar on Incidence of Pebrine in Mysore Seed Area

SAI conducted 2 Webinars exclusively for garnering information about the reported incidence of Pebrine in Mysore seed area, to bring it to the notice of concerned authorities and also suggest measures for containing it, to save the silk industry of Karnataka.

The first Webinar was conducted on 21st March, 2022 to get first-hand information about the incidence of Pebrine in Mysore seed area and other commercial areas of Karnataka.

More than 50 members (including farmers, CRC owners, RSPs, SAI members, retired officers/scientists, DoS Officers) participated in the Webinar and provided a very disturbing information about the rampant incidence of Pebrine in Mysore seed zone and even in other commercial areas. Especially the southern region where conventional cross breed rearing is carried out on a very large scale, high incidence is reported in the advanced larval stages (20%). Few CRCs also have reported incidence of Pebrine even at egg stage (30%). Similarly, the private Registered Silkworm Seed Producers (RSPs) reported Pebrine incidence at pupal level (> 40%) in the seed cocoons procured from Mysore seed zone.

The above facts clearly indicate that Pebrine that perceptibly originated from seed zone, is prevailing in almost all stages and getting spread over to other areas destructively. The possible reasons for this are:

- Stringent mother moth examination was not carried out at every level of downstream multiplication (P4 to P1)
- Predictive tests were not carried out before the seed cocoons are brought to the markets
- Seed cocoons are transacted very casually without conducting the mandatory Pebrine tests at the market level
- Few RSPs must have prepared the silkworm seeds from the infected batches and passed them on to the CRCs without conducting pupa/mother moth examination
- RSPs even when observed Pebrine during the production, might not have rejected such batches considering the economic loss that they are going to incur in case if they send the seed cocoons for reeling
- RSPs may not have reported the incidence of Pebrine in seed cocoons with a fear that the market officers may not supply future requirements of seed cocoons
- Some RSPs reported the Pebrine incidence in the left over P2 seed cocoons supplied to them. They apprehend that such P2 seed cocoons are used for the production of P1 seed and distributed in the seed area, and if not properly tested and rejected, the whole seed zone will be loaded with Pebrine spores.
- Some RSPs used reeling Mysore seed cocoons to cut down the cost of production

The situation is alarming and needs immediate prophylactic measures to be initiated for containing Pebrine in both the Mysore seed zone and other commercial areas.

In the above direction, SAI had detailed discussion during the recently held Webinar and its recommendations are summarised below to save Karnataka Silk Industry.

- Organise Pebrine testing squads and strengthen testing at seed zone P4, P3, P2 and P1 levels
- Polyvoltine (Multivoltine) eggs can be cold preserved up to 20 days, but could result in low hatching. However, it is advantageous to keep 10% buffer stock at P4 level. Whenever high incidence of Pebrine is noticed at any multiplication level, the whole lot (source) has to be rejected
- It is very essential to post a very experienced officer with a thorough knowledge of seed area operations to P4 station (SAI in the sole interest of disease-free seed area, feels that Sri Ravi, Deputy Director, presently working as Deputy Director, Magadi is experienced and has all the experience and fits well to that position)
- Preventing Pebrine at Basic seed level is of utmost importance since any error at a multiplication level will magnify it in subsequent seed multiplication at lower levels causing the disease to increase and spread alarmingly. Strict and cent percent mother moth examination is essential, which can be easily adopted at the basic seed level, since the quantum of basic seed produced for multiplication is in limited quantity.
- Ensure quality and disease-free, self-certification of silkworm seed/chawki worms by the RSPs and CRC owners as per the provisions made under the Central Seed Act
- Additionally, until the Pebrine is controlled in Mysore seed area and other areas organise testing squads of scientists drawn from CSB and KSSRDI, they must visit Basic seed farms, P4 / P3 grainages, CRCs and P2 /P1 grainages and conduct Pebrine examination at regular intervals

- Ensure mandatory test of the lots before seed cocoons are permitted for transaction in the markets
- Provide good testing facilities in all seed markets for Pebrine testing by the seed cocoon purchasers
- Ensure that the infected seed cocoon batches are compulsorily stifled and sent for reeling by the market officer
- Ensure that Pebrine infected batches in the commercial areas are rejected and scientifically disposed off
- In all markets display the details of Pebrine infected batches so that the RSPs can cross verify and initiate necessary actions if need be. Use information technology (Digital based) in the Mysore seed area to locate, isolate and destroy the Pebrine infected batches. To make this easy all the batches of P1 eggs supplied in the Mysore seed area must be given a unique batch number
- Increase the frequency of joint Pebrine survey by KSSRDI, SSTL, NSSO and CSRTI, Mysuru
- To overcome the man power crunch DoS may utilise the services of retired DoS/CSB scientists/technical staff until Pebrine comes to control in the seed zone and other areas
- Alternatively, excess staff posted at cocoon markets may be temporarily deputed to seed area until the conditions improve
- Initiate mass disinfection drive in the Mysore seed area
- Provide refresher training to all seed area staff in Pebrine examination
- DoS may consider introducing silkworm seed insurance for the benefit of RSPs which will encourage rejection of Pebrine infected batches without incurring any monitory loss
- All the stakeholders are ready to join their hands for controlling Pebrine and implement whatever the measures are suggested by the department and the experts
- **Most importantly to take stock of the situation and to formulate strategies, a meeting with all the organisations/institutes may be arranged by DoS Karnataka immediately without losing any time. Retired officers of DoS Karnataka and others who were associated with 'Project for Pebrine Control' during 1991-92 may also be asked to attend that meeting and give their valuable suggestions**
- **It is advisable to constitute a 'Task Force' of experts for overseeing implementation of all the suggested measures for effective control of Pebrine**

SAI, strongly feels that only a better man management would successfully and effectively control Pebrine. SAI, assures every support, cooperation and coordination that is required to make the State Pebrine free.

How did Karnataka Contain Pebrine Incidence in 1991-92 ? A Success Story

H.A. Nagaraja Rao
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Most of the silk produced in Karnataka comes from the conventional crossbreed cocoons. These crossbreed cocoons are harvested by rearing the silkworms hatched from the hybrids prepared by using Pure Mysore (PM) female parent and elite bivoltine (CSR2) male parent. Karnataka has earmarked and designated Magadi, Kunigal Taluks and Hebbur hobli of Tumkur taluk as 'Mysore Seed Area' and exclusively generate Mysore Seed Cocoons (MSC). Every seed producer of the state engaged in the production of crossbreed hybrids stick on to the existing regulations and procure MSC from the designated seed area only, while the male parent bivoltine seed cocoons are generated utilizing the services of Adopted Seed Rearers (ASRs) located at other areas. The crossbreeds are supplied to the commercial area farmers through Chawki Rearing Centers (CRCs). Commercial farmers who buy chawki worms from CRCs conduct adult silkworm rearing and produce yellow cocoons, and sell them to reelers through cocoon markets and in turn the reelers produce yellow silk. This production cycle continues without any interruption, unless and until it is disrupted by human technical errors.

Major stumbling block which makes the production cycle weak or bring it to the state of deterioration is the incidence of Pebrine disease caused by microsporidia and transmitted from the female parent to the next generation. In view of this, Government through the Department provides additional facilities to the farmers in the Mysore Seed Area, solely to protect the basic seed stock free from this deadly disease.

During the year 1991- 92, rampant Pebrine incidence was noticed in the basic seed of Mysore Seed Area and its cascading impact resulted in the massive failure of crops in the commercial areas. Under such testing time, I was handpicked by the then Commissioner of Sericulture and posted as the Project Officer to specially monitor and control Pebrine disease, by adopting all the technical protocols, mobilizing and managing the available manpower.

Stringent adoption of the mother moth examination, the only available and widely advocated technology to contain primary incidence of Pebrine disease and close monitoring of the seed crops clubbed with larval examinations at regular intervals by the experienced technical staff resulted in the control of Pebrine disease within a short span of 3 months in the basic stock and the parent seed cocoons. Strategies and technologies adopted by me and my team, at that time to control Pebrine disease are enumerated here, which are quite replicable to confront similar situations.

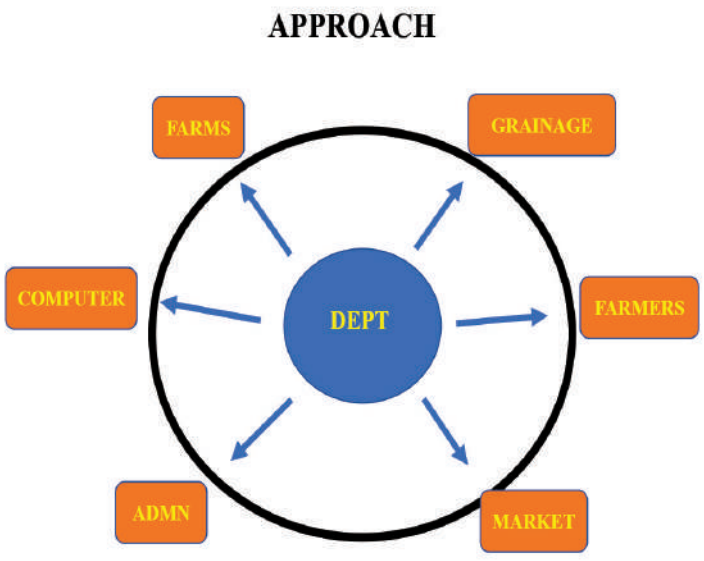
Mysore seed area is the heart of the silk industry of Karnataka and hence, it was very essential to make it Pebrine free. In that direction all the prophylactic measures in every stage were placed and monitored. Activity based four level approach was introduced with the following thrust areas.

Level 1 Basic seed farms (Multiplication stages) – Egg stage, larval stage, cocoon stage

Level 2 Grainages – Pupal stage, Mother moth stage

Level 3 Field (farmers) – Larval stage, spinning stage and disease-free certification

Level 4 Markets – Pupal stage – compulsory steam stifling of infected lots



1. Farms Level

As the primary infection can only be controlled through mother moth examination, our entire attention and focus was on the selected farms carrying out the basic seed production at P4-P3-P2 multiplication stages. To begin with it was ensured that all the stations are adequately equipped for conducting Pebrine examination properly and scientifically. To overcome the possibility of cross infectivity in the farms, elite farmers in the isolated locations of the seed area were assigned as P2 rearers and special squads were formed to conduct disinfection of the rearing houses, supervision of the crops, conducting larval examinations (especially the late moulters and the non-moulters). In case when there was incidence of Pebrine in any batch, other bifurcates were scrupulously checked and all the infected batches used to be destroyed.

While, the P4 cellular rearings in selected Farm were under the close supervision of the Joint Director, P3 silk farms and P2 multiplication levels were supervised by the Deputy Directors and Asst Directors. Screening and discarding the affected cellular batches were strictly followed. Even the cocoons from each cellular batch were preserved separately and screened, after thorough examination of pupae and mother moths. Many a times the infected basic stocks were replaced with buffer stocks of P4 and P3 maintained at SANSHI Silk Centre, CSRTI, Mysore and KSSRDI, Thalaghatapura. That is how the P4 and P3 stocks were made Pebrine free.

2. Grainage Level

The P4 & P3 Grainages were directly under the control of Joint Director and Deputy Directors and they were advised to do the mother moth examination by themselves. Cross examination of each smear by another officer was made compulsory.

At the P2 stage, all the members of the departmental staff were involved in moth examination, whereas at P1 stage trained moth testers were engaged in the rigorous examination of the mother moths. Any moth tester reporting Pebrine first in any lot used to be rewarded. Eggs of each lot were kept separately for distribution to more than one center. All the Grainages were properly equipped with Microscopes & other testing accessories.

3. Farmers level

Batch brushing was adopted for better monitoring. Brushing would follow proper and compulsory disinfection of the rearing area. Examination of the late moulters in the III stage was ensured and any infected lot would be discarded.

Immediately, the next batch would be brushed after thorough disinfection for meeting the demand of the Farmers. This was a break through step in the control of Pebrine disease, as it ensured supply of only disease-free eggs to the farmers. In addition, we could predict the availability of seed cocoons in the market arrivals, based on the progress of the crop.

Senior officers (Sericulture Assistants) were posted in addition to the Field officers (Sericulture Demonstrators) to supervise and report the behavior of the crops duly examining the worms at different stages and especially at the time of moulting and spinning, so that the crop could be screened out in case of infection and the farmers were suitably compensated for the rejection of crops.

4. Market level

Only such lots which were certified as Pebrine free by the Field Officers after conducting examination during the late larval and spinning stages were allowed in the markets for their transaction. However, to ensure supply of only the disease-free seed cocoons, meticulous pupal (especially the melted and defective pupae) examination in the markets was enforced. Any batches which revealed Pebrine during pupal examinations were disposed of, for reeling through open auctioning. Suitable compensation was provided by the Government to the farmers for the difference in price between the seed and the reeling cost. In addition, spot stifling facilities were created in all the seed markets, enabling the reelers to use the facilities to stifle the cocoons and also to avoid spread of Pebrine. This would ensure the infected MSC are not used for crossbreeding purposes.

5. Administration

The Project Officer was given free hand for penalizing the erring officers if any, and at the same time rewarding the ones who did commendable works in Pebrine detection and its control. Enough number of vehicles were provided for movement of the officers supported by sufficient assistants, as, this is a project of Man Management. Adequate support from CSRTI, Mysore, SSTL, Kodathi and KSSRDI, Thalaghatapura was also ensured especially for microscopic examination and replacing the P4 and P3 infected batches with the fresh and disease-free batches of the respective research institutes.

6. Centralized monitoring wing

A centralized monitoring wing was organized at the Basic Seed Farm, Bilidevalaya, involving a group of responsible officers to keep track of the examination results of each lot right from eggs to the supply of cocoons to the seed producers. All the bifurcated batches in progress were informed of the incidence, if any, in any of the lots.

Computer programme Lotus 123 that was available in1991-92 was used to keep track of each lot. A close monitoring system was developed by the Project Officer, of following every crop, commencing from the primary source of the lots (Grainage level) up to the disposal of MSC to the seed producers, after a rigorous check at various stages, which was indeed very helpful.

7. General

- Staff meetings were conducted at quick successions to know the progress made and the intensity of Pebrine infection in the seed area and also to educate the staff about the future course of actions
- In addition, there was a close interaction, periodical meeting between the Research Institutes and the Department for the progress / supply of seed at P4,P3 stages
- Test, Trace and Destroy mechanism was adopted to bring the disease under control
- Senior officers visited the villages to interact with the farmers, bring awareness about Pebrine disease and also to take stock of the field level situation. This also helped the farmers to get first hand information about the timely or delayed supply of eggs
- Field days were conducted at ideal locations involving the departmental officials, local leaders, seed producers and farmers to educate them about the steps taken by the Project Team to control Pebrine in seed area and request them to cooperate
- Mass disinfection of the villages was easy as batch brushings were introduced with 2-3 days gap between 2 batches
- Women sericulturists were motivated to join with the department and were actively involved in the batch brushings
- Mobile testing and disinfection vans headed by the departmental and research institute staff were pressed into service and toured the entire seed area at regular intervals and conducted related activities. They also conducted survey of the disease incidence in the villages and provided feed back to the Project Officer.

- Repairs, white washing was done for all the buildings including the Residential Quarters in all the Silk Farms
- One residential quarter was converted for the sports activities for the Ladies and Children residing in the campus
- Outdoor Sports was initiated in all the Farms and Tea was served to all the participants just to motivate them

Although, this task of containing Pebrine in the seed area and in turn the commercial area was challenging, all efforts were made to make it also interesting. Without taking the departmental staff into confidence, the support extended by the seed area farmers, seed producers, able assistance by the research institutes and encouragement of the superiors, it would never have been possible to control Pebrine and save the silk industry from destruction.

The bottom line is controlling Pebrine is more a '**Man Management**' than adopting the basic research and comparable to the present COVID situation.

Research Brief

Silkworm Cocoons that can Beat the Summer Heat

H.K. Basavaraja and B.S. Angadi

Gunma, in Japan, has been a home of silk enjoying its status for the largest production of cocoons and raw silk in the nation, where the industries of sericulture, silk reeling and textile weaving have developed in the right equilibrium. Raw silk in particular was exported mainly to European counties after the Meiji period and promoted the industrial modernization of the country. Efforts are underway to promote the production of high quality and distinctive cocoons and raw silk, branding of "Gunma's silk" and creation of new industries using various functions of silkworms. Gunma Prefecture, in the north-west of Tokyo, is the largest producer of silkworm cocoons in Japan, with the amount for fiscal 2018 reaching about 41 metric tons.

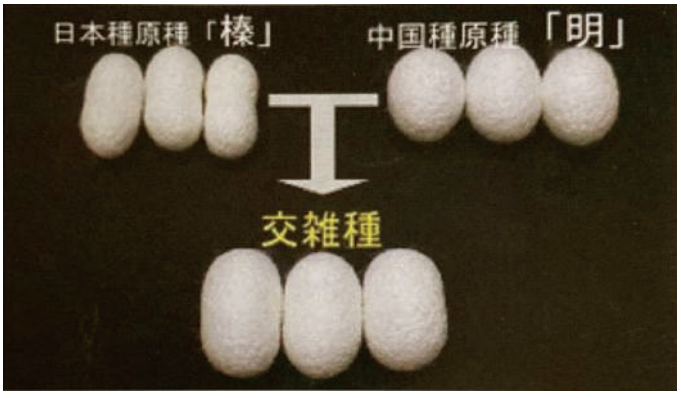
Because Gunma is situated in inland Japan, the difference in temperature in the summer compared to the winter is large, and there is less precipitation. This is because of the kara-kaze (empty wind), a strong, dry wind which occurs in the winter when the snow falls on the coasts of Niigata. The wind carrying clouds with snow are obstructed by the Echigo Mountains.

According to the prefectural government, with temperatures at 30 degrees Celsius or more, silkworms can develop diseases or stop spinning silk, which results in cocoons that are smaller than those spun in average temperatures. In recent years, the temperature in Gunma Prefecture has hit 35 degrees Celsius or higher during summer.

Development of a new breed

Since the 2012 fiscal year, the Gunma Sericulture Technology Center in the prefectural capital of Maebashi has been working to develop improved breeds of silkworms in response to concerns about the insects' poor growth and drop in quality of cocoons from silk farmers and those related to the industry.

Officials at the Center crossed the Japanese breed Shin with the Chinese breed Mei, which are relatively resistant to heat. The crossbreed was able to withstand temperatures of 35 degrees Celsius or more for several days in a row, and the yield of silkworm cocoons rose by some 5 kilograms per box of 30,000 silkworms. In addition, the ratio of disentanglement of the cocoons' filament, which is used to measure the quality of silk, increased by about 20 percent compared with the existing breed.



The new crossbred cocoons above, of Japanese silkworm cocoon Shin (top left) and the Chinese breed Mei (top right) (Photo courtesy: Gunma Prefectural Government)

Silkworm farms in Gunma Prefecture will conduct tests to raise the crossbred silkworms during summer. An expert committee of those from the silk industry and other authorities will then decide whether to certify the crossbreed as a prefectural original breed by the middle of September at the earliest. (Japanese original by Naoki Sugi, Maebashi Bureau of The Mainichi).

SAI Conference Announcement

India, the second largest producer of raw silk and the only country producing all the five silks of commercial value and contribute 37% to world's raw silk production. On the contrary, the fast-changing scenario of global silk production, China's silk production is showing steep declining trend creating huge gap in demand and supply of raw silk at the global level. Indeed, India is the only country which has the potential of filling this gap by making use of this golden opportunity. However, this is an uphill task to accomplish and needs a greater vision and well-defined road map with all preparedness. In spite of its best efforts to become self-sufficient, the country still imports 30-40 per cent of quality raw silk to meet the demand for power loom sector. Hence this is a time for all the concerned to come together and discuss the issues confronting the production and quality front and draw a strategic plan with definite mile stones and targets. Precisely in this pretext SAI proposes to organize a **National Conference** on '***Indian Sericulture - Current Status & Future Challenges***'and **Foundation Day** celebrations, with support from the Department of Sericulture, Karnataka, Andhra Pradesh, Tamil Nadu and Central Silk Board.

The Conference will be held on **14th of October 2022 at Bengaluru**, silk and Silicon Valley of India. The Venue of the conference is KASSIA Auditorium and about 350-400 stakeholders from different parts of the country representing all sectors of silk value chain from soil to fabric are likely to avail the opportunity. The Heads of Sericulture Departments of all major silk producing States of the country will be sharing their views and strategies for promotion of sericulture industry in their respective States. Besides, there will be 8-10 lead lectures by the experts in their respective fields highlighting the challenges and strategies for promotion of important segments of silk industry. As a part of the program, a commemorative souvenir will be brought out containing the above State sericulture scenarios and lead papers by the experts.

Objectives of the Conference

- To take stock of the current status of sericulture Industry in different/ major silk producing States in the form of status papers
- To bring out a souvenir comprising of all status papers and R&D contributions of different Institutions
- To identify gap areas/challenges and develop strategic frame work of R&D need of the country
- To suggests suitable policy frame work for supporting sustainable and orderly growth of the industry in the country
- To draw a national action plan and road map for next 5 and 10 years period to make India as a global leader in silk production

Theme/Subject Areas

- Importance of silkworm breeds (maintenance) in silk industry
- Silkworm egg-demand, production and supply issues
- CRC management and farmers aspirations
- Cocoon quality and marketing aspects
- Raw silk production, quality and marketing challenges
- Extension and support services
- Inter institutional coordination and synergy
- Policy gaps and reforms needed
- International demand and supply situation-current scenario
- Opportunities, challenges and way forward to emerge India as world leader
- Weavers' perception of raw silk quality

A separate circular is being issued and the interested persons for attending the National Conference in person, may kindly register in advance, by remitting an amount of Rs 100 (Rupees one hundred only) to the following bank account.

Beneficiary	:	Silk Association of India
Bank	:	Indian Bank
Branch	:	Basavangudi
A/c No	:	714944030
IFSC	:	IDI000B013

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Request to Seri-business Entrepreneurs

SAI is organizing a **National Conference** on '***Indian Sericulture - Current Status & Future Challenges***' and **Foundation Day** celebrations on 14th October, 2022 at Bengaluru and brining out a commemorative **Souvenir** which will be distributed across the country among all those involved in sericulture activities. SAI requests all the Seri-business entrepreneurs, who are the pillars of the Indian silk industry, to place their advertisements in our forth coming **Souvenir** and get benefitted.

Tariff for advertisements is:

1. Back Cover (Colour) – 1,00,000/-
2. Inside Front/Back Cover (Colour) – 50,000/-
3. Inner full Page (Colour) – 25,000/-
4. Inner full page (Colour Sheet) – 10,000/-
5. Inner half page (Colour Sheet) – 5,000/-

Contact Secretary, SAI (+91 94480 67679) for further details.

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