

IMPACT OF MANAGEMENT PRACTICES IN TASAR SEED PRODUCTION: A SUCCESS STORY OF BSMTTC, BALAGHAT, MADHYA PRADESH

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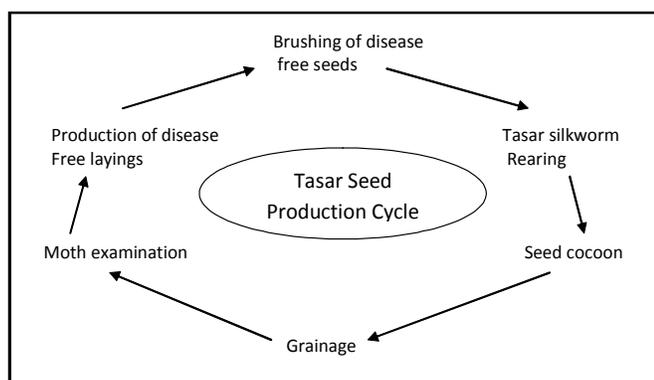
Seeds form the back-bone of Tasar Sericulture and Basic Seed Multiplication and Training Centers (BSMTTC) plays key role in providing quality seed to the consumers, the sericulture farmers.



The integral parts of any tasar seed production programme are:

- Tasar silkworm rearing
- Grainage and
- Moth examination for production of disease free seeds

At BSMTTC level every tasar seed production cycle starts from brushing of disease free seeds, commonly called disease free laying, or DFL in short, followed by tasar silkworm rearing leading to seed cocoon production, cocoon sorting, grainage, moth examination, seed



washing, dfls packing, transportation, seed storage and brushing.

Evidently seed production is a complex process involving number of steps and even a single miss cost heavily, leading to disastrous performance of seed production centre concerned.

BSMTTC, Balaghat was ridden with lower seed production and higher disease incidence during 2001-02 and period prior to it. In contrast now this centre is known for its quality dfls in tasar belt. Seeds produced by this centre are popularly known as “Balaghat Anda” among rearers of M.P. and Maharashtra. How it happened? It

was made possible by using management practices. Here goes the success story.....

It all started with a team of scientists taking over BSMTTC, Balaghat. Team held a brain storming sessions, involving number of tasar scientists from different centres, on a continuous basis and also involved expert scientists. They located the problems as:

- Poor silkworm rearing performance
- High silkworm disease incidence during rearing
- Poor host plant maintenance resulting in poor quality food and reduced immunity in silkworms reared on them, thus higher disease incidence.
- Inferior quality seed cocoon
- Deficiencies in grainage operation
- Higher Pebrine disease incidence

Scientists started to look for probable solution and control / curative measures. It was duly noted that scientifically proven technologies were available to deal with every problem faced by BSMTTC, Balaghat, but systematic application was lacking. Only thing needed was a systematic approach. Different approaches were tried and outcome reviewed every year followed by corrective steps.

Systematic approach and management practices followed were:

Disinfection of rearing field (Period Jan to March):

Activities include: Collection of rearing debris, viz., silkworm excreta and dead worms, fallen leaves and twigs of plants and disposal of them into dugout pits, outside the rearing field.



- Controlled fire and flame gunning to disinfect the field

- Sealing of holes and tunnels prevailing in rearing field

Impact of this activity: Reduced pathogen load and decreased multiplication of pathogen.

- Reduced population of pest and predators of silkworm and host plant.

Plantation maintenance: Pruning and pollarding of

plantation (Period Jan to March)

- Removal of weeds and unwanted bushes (Period Jan to March)

- Three sprays of 0.09% Rogor at interval of 15 days to check gall infestation (Period April – May).



- Cultural operation around the plants (Period April – May).

- Application of NPK fertilizers and FYM (Period June to August)

- Selected plants for chawki rearing and supplied NPK and FYM as per recommendation and maintained these plants at a manageable height. Such plants were referred as chawki plants

Impact of this activity: Rejuvenated tasar food plants.

- Control of gall infestation so also created a barrier for other insects which may act as vector for diseases.

- Cultural operation facilitates proper aeration and moisture retention in the soil.

- FYM and fertilizer application results in improvement in leaf quality which in turn results in improved health of tasar silkworm and cocoon quality.

Rearing management (Period June to December): Selected elevated well aerated rearing site

- Brushed quality disease free seeds. Disinfected DFLs with 5% formalin for 5 minutes one day prior to brushing.

- Brushed only high fecundity (250 and above) DFLs.

- Used nylon net for chawki brushing, wherever possible.

- Brushed on chawki plants or plants with succulent leaves.

- Disinfected rearing site by dusting of bleaching powder and lime mixture (1:9 ratio) one week prior to commencement of rearing.

- Avoided overcrowding of worms on bushes to avoid starvation and worms remain healthy.

- Tested silkworm larvae for Pebrine during each stage.

- Removed diseased / dead and weak larvae and larval excreta from rearing field and disposed them in a pit made away from rearing site.

- Sprinkled bleaching powder and lime mixture (1:9 ratio) in rearing field on regular basis.

- Disinfected rearing appliances viz., worms

shifting trays/ bamboo basket(s), secateurs, plastic basin etc. daily.

- During transfer of worms used labex/ Vijetha powder invariably.

- Disturbance to worms under moult was strictly avoided.

- Used mechanical means and locally available no-cost/low cost pest management practices for control / prevention of pest attack.

Impact of these activities: Maintenance of hygiene and reduced disease inoculum.

- Prevention of secondary contamination. Reduced disease incidence.

- Use of nylon net during chawki rearing resulted in reduced loss of worms leading to high effective rate of rearing.

- Higher production of quality cocoons.

Selection of cocoons for grainage: Selected well built, tough shiny, almond / grayish white cocoons on visual and feel basis.

- At first selected 10 good cocoons from the lot and then these cocoons are taken as bench- mark for selection of cocoons, to be kept for grainage purpose.

- Checked the lot for pebrine. Only pebrine free/ near free lots were used for further selection of cocoons.

Impact of this activity: Eradication of pebrine disease in grainage.

- Decreased diseased levels.

- Increase grainage performance.

Grainage: E1: Preparation for grainage:

- Through cleaning of grainage house by removing remains of cocoons, moths and eggs.

- Fumigation of grainage house with formalin and potassium permanganate mixture (2 ltr commercial formalin and 500g potassium permanganate) and sealing of the doors and windows of grainage house for 72 hr.

- Disinfected appliances, earthen cups and nylon net.

- Procured the cocoons from pebrine free zone . Cocoons were procured from sources, where microscopic examination for pebrine was regularly done during rearing.

Impact of this activity:

- Decreased disease incidence and spread.

E2: Grainage operation:

- Floor of grainage house were wiped, on daily basis, by using disinfectants like 5% bleaching powder solution.

- Grainage house were swept daily and debris /



refuse removed.

- Placed foot disinfectant tray and wash basin/ pot containing 2% formalin solution.
- Sprinkled bleaching powder and lime mixture (1:9 ratio), daily, all around grainage house.



- Selected only healthy females with large abdomen.
- Oviposition carried out in pre-disinfected well aerated dark room.
- Allowed 72 hours for oviposition.

- Discarded dead moths and their eggs. Also discard moths with low fecundity so also discard their eggs.

- Select such moths for microscopic examination that have higher fecundity ranging from 200 – 250.

- Carry out microscopic examination of each moth for pebrine. Discard moth (and their eggs) affected with pebrine.

- Egg laying obtained from disease free moths is referred as DFL.

- Dfls are washed using egg washing technology.

- Washed dfls are dried and packed in egg carrying bags @ 100 dfls/bag.

- DFLs are again washed with 5% formalin 01 day prior to hatching.

Impact of this activity: Maintenance of hygiene

- Reduced chances of cross infection during grainage.

- Surface disinfection of eggs help ensuring disease free rearing.

- Elimination of pebrine disease at grainage level and thus avoiding primary infection.

BSMTC, Balaghat has been using the enumerated approach from year 2002 onwards and by the end of 2009-10 it has succeed in bringing down the pebrine level to near zero. Cocoon production increase from 3.74 lakh cocoons during 2002-03 to 7.29 lakh cocoons during 2009-10 (Fig. 2). DFL production increase from 111 thousand during 2002-03 to 220 thousands in 2009-10 (Fig. 1). Similarly DFL supply from BSMTC, Balaghat increased from 96 thousand during 2002-03 to 203 thousands during 2009-10 (Fig. 3). In view of the success achieved by BSMT, Balaghat (Fig. 1-3) it is advocated that all tasar seed production units of Central Silk Board, State Sericulture Departments and private granears must follow above explained systematic approach on a continuous basis to achieve success. It will not only help these units to overcome failure of grainage and increase production of quality tasar seeds but also ensure crop success and help achieve higher production of quality cocoons.

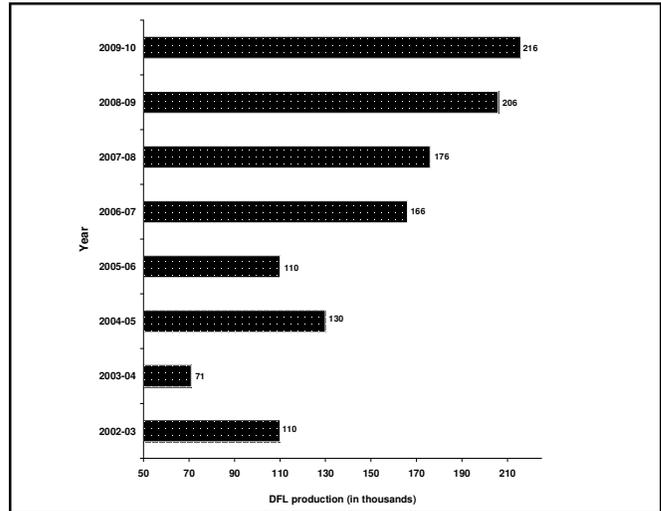


Fig. 1 : DFL production at BSMTC, Balaghat

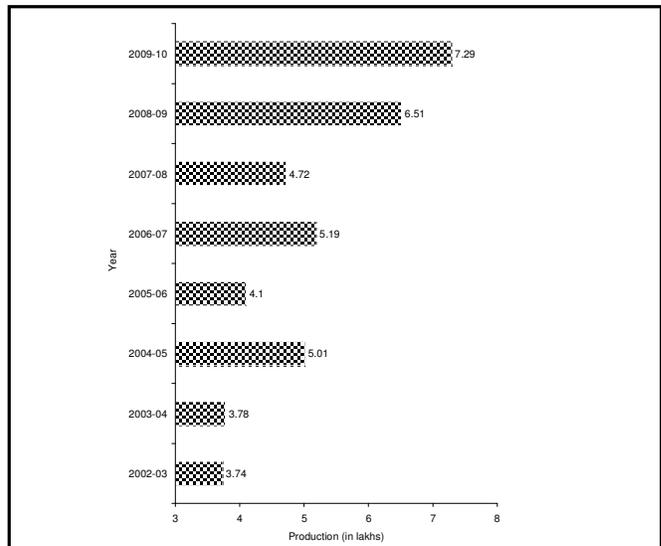


Fig. 2 : Cocoon production by BSMTC, Balaghat

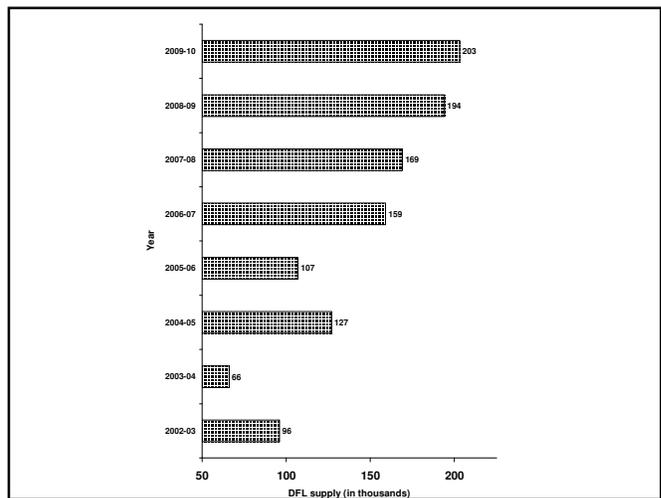


Fig. 3 : DFLs supplied by BSMTC, Balaghat

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