

Research Article

METHOD OF USE OF BED DISINFECTANTS FOR ENHANCING COCOON PRODUCTIVITY

***Shashi Kanta**

Punjab Institute of Technology Dinanagar, (Punjab)

**Author for Correspondence*

ABSTRACT

On account of domestication of silkworm *Bombyx mori* L. has acquired delicacy towards biotic and abiotic stress. Though, it protects itself due to its own protective mechanism, even then during course of rearing it is exposed and comes into contact of contagion atmosphere of different kind of pathogens through various means and measures. As such it calls for the need of using the bed disinfectants in silk worm rearing to keep the disease menace pathogens under the control. Present paper deals with information about usages of Various Disinfectants for better cocoon harvest and enhancing cocoon productivity and as well as to improve economic return for viability of mulberry sericulture.

Keywords: *Silk Worm, Bombyx Mori, Bed Disinfectants Biotic & Aboiotic*

INTRODUCTION

“Queen of Textiles”, unchallenged so far by other fibbers, is a nature’s gift for human kind. India is one of the leading silk producing countries in world. At present India is the second largest silk producing country. To increase the silk production, there is a need to develop highly productive mulberry varieties and silkworm races which are tolerant to adverse climatic conditions and diseases (Jolly *et al.*, 1987). Jolly *et al.*, (1987) silkworms have been domesticated over centuries become very delicate and susceptible to diseases due to the infection by a number of pathogens. The infection by the pathogens and crop losses due to diseases is prevalent in all leading silk producing countries. Silkworms are susceptible to a number of diseases caused by different infectious organisms. The cocoon loss due to weak Silkworm *Bombyx Mori* L (Doreswamy, 2004).

Due to its body constitution and physiology has acquired delicacy towards biotic and abiotic stress (Balavenkatasubbaiah *et al.*, 1989). During rearing due to its Own protective mechanism , it protect itself, but when it comes into contact of contagion atmosphere and different kind of Pathogens through various means and leads to possibility of various , infection in turn crop performance is badly affected leading to crop loss by which stakeholders fail to get expected returns (Balavenkatasubbaiah *et al.*, 1989).

Following possible causative factors are responsible source of contamination and epidemic outbreak of silkworm diseases.

1. Excessive humidity cause weak larvae, susceptible for disease causing organisms. Non availability of required humidity during rearing hours of silkworm.
2. Fluctuations in temperature and RH during course of rearing Starvation and feeding of worms not in conformity with the stage of worms results in promotion of susceptibility of worms (IrfanIllahi and Khan, 2004).

3. Temperature during the silkworm rearing is much high or low humidity .It is sufficient for influencing change in biochemical reactions as well as enhances rate of multiplication of pathogens.

4. Thickness of rearing bed and dense

Population of silkworm promote favourable atmosphere for out bread of diseases.

5. The quality of mulberry leaves decided the health, growth and survival of rearing worms. A high nutritive value of leaf depends on nitrogen content in Mulberry leaves and amino acids in particulars proteins are the most important organic nitrogenous compound in the food stuff of silk worm which are involved practically in all the structure and function of the cells, is derived from leaf.

It is well know that more than 80% sericulture beneficiaries do not make use of Slaked lime and bed disinfectant properly and in rearing environment through different routes such as mulberry leaf water and

Research Article

the rarer are routes of entry and spread of pathogens in rearing environment and becomes mode of secondary contamination.

In view of enforcing constraint pertaining to effective disinfection of farmers rearing house and appliances, as rearing of silkworm progresses pathogen load in Silk worm bed simultaneously increase and attain optimum level as and when silk worm comes out of IVth molting and expresses disease symptoms therein.

To have control over multiplication and accumulation of pathogen in rearing bed and use of slaked lime (Irfan Illahi and Khan, 2004) and bed disinfectant as recommended is essential and most important to disinfect the silk worm body as rearing seat for better harvest of silk worm crop (Swathi, 2004).

MATERIALS AND METHODS

Use of Bed Disinfectant in Sericulture

In Sericulture history many of bed disinfectants gained importance from time to time (Balavenkatasubbaiah, 1983). These methods are following:

1. Formalin Chaff
2. Labex
3. Resham keet oushad (RKO)
4. Sanjeevini and suraksha
5. Resham jyothi
6. vijetha

1. Formalin chaff: - It was being used against fungal, viral, bacterial pathogens influencing silkworm health. Its use scheduled and recommended dilution is as follows.

- a. Ist & IInd age worms - 0.4%
- b. IIIrd age worms - 0.5%
- c. IVth age Worms - 0.6%
- d. Vth age Worms -0.8%

One part of formalin solution + 10 part of chaff (Paddy Husk) (Shiva, 2003)

1. Labex:- It has been recommended against Silk worm disease in general for grasserie and muncardine labex mixture of 97 part of slaked lime and 3 part of bleaching powder. Labex is cheaper than other bed disinfectants.

2. Resham keet oushad (RKO) Effective against Grasserie and Muscardine and gained population as RKO (Subbarao *et al.*, 1992).

RKO ingredients are

- i. Staked lime powder
- ii. Benzoic Acid
- iii. Captan / Diathane
- iv. Formaldehyde

It is very much essential to mix homogenously all components / ingredients of RKO for its effectiveness (Subbarao *et al.*, 1992).

3. Sanjeevini:- It is an effective bed & seat disinfectant for grasserie and Flacherie (Subbarao *et al.*, 1992) and its prior dusting on the tray surface before brushing of silk worm in recommended does is capable to control surface contamination by the pathogens and disinfectants has shelf Life of six month.

4. Suraksha:- Effective to control white Muscardine and is effective for use for six months

Research Article

5. Vijetha:- It has Claim for its efficacy against all the four diseases:- Pebrine, Grasserie, Flacherie, Muscardine (Subbarao *et al.*, 1992) It is for one year Period.

Vijetha supplement Effective against white Muscardine and does not have any smell and do not causes discomfort.

RESULTS AND DISCUSSION

Bed Disinfectants – Precautions & Direction for Use

Use recommended bed disinfectant in conformity to the schedule may boost up productivity to the tune of 24 to 40% and thus giving additional income generation. Label, RKO, Sanjeevani, Suraksha Resham Jyoti and Vijeta methods have different recommended methods of bed disinfection and different reactions on different stages of silkworm larvae. In transfer before brushing to empty tray Label, RKO, Resham Joyoti and Vijetha are no need to use, Whereas Sanjeevani and Suraksha have effect of 20 (Samson *et al.*, 1992). In newly hatched stage all methods are not applicable except Resham Jyoti.

After 1st molting Label play important role Whereas after 2nd, 3rd and 4th molting Vijeta show maximum use. On 4th day of 5th instar Resham Jyoti has maximum consumed. So in total use of Vijetha is more than others (Samson *et al.*, 1987).

Stages Contemplated For Application Of Disinfectant	Label	Resham Keet Aushad	Sanjeevini	Suraksha	Resham Jyoti	Vijetha
Before brushing to empty tray	NA	NA	20	20	NA	NA
Newly hatched larvae	NA	NA	NA	NA	3	NA
After 1 st moult	120	80	50	50	35	50
After 2 nd moult	180	120	120	120	105	150
After 3 rd moult	300	560	350	350	300	600
After 4 th moult	800	960	750	750	850	1200
On 4 th day of 5 th instar	2100	1550	1500	1500	2150	2000
Total	3500	3270	2790	2790	3443	4000
Or in kg	3.5	3.270	2.790	2.790	3.443	4.0

Bed Disinfectants – Precautions & Direction for Use

1. Recommended bed disinfectant in conformity to the schedule may boost up productivity to the tune of 24 to 40% and thus giving additional income generation.
2. New or clean muslin cloth should be used for dusting bed disinfectant.
3. As far as possible rearing bed should be free from fresh mulberry is to be ensured (Balavenkatasubbaiah *et al.*, 1987).
4. Nose and ears needs to be protected by mask or cloth at the time of proper application.
5. If, any disease worm is noticed before application it need to be screened to have check on pathogen.
6. 2 to 5 gms of disinfectant per sq feet of rearing bed is required for its appropriate application and its efficacy.
7. Most of the disinfectants are effective for a period of 6 months to one year. Before its application its expiry should be checked (Balavenkatasubbaiah *et al.*, 1987).
8. After use empty container should be destroy buried in soil or burnt (Sharma, 2006).

Conclusion

Bed disinfectants are effective & have potential to control and check multiplication of pathogen and prove to effective if applied as per guidelines and directives and provided condition of rearing for silkworms so

Research Article

as to have check on outbreak of silk worm diseases and technology has to be fully disseminated amongst the farmers as well as the extension personnel (Dandin *et al.*, 2003).

REFERENCES

Balavenkatasubbaiah M, Sharma SD, Baig M, Singh BD, Venkatareddy S and Noamani MKR (1989). Role of disinfection of Rearing appliances and sun-light exposure on the inactivation of disease causing pathogen of silkworm, *Bombyxmori L.* *Indian Journal of Sericulture* **28**(2) 200-205.

Balavenkatasubbaiah M, Sharma SD, Baig M, Singh BD, Venkatareddy S and Noamani MKR (1989). Role of disinfection of Rearing appliances and sun-light exposure on the inactivation of disease causing pathogen of silkworm, *Bombyxmori L.* *Indian Journal of Sericulture* **28**(2) 200-205.

Dandin SB, Jayaswal J and Giridhar K (2003). *Handbook of Sericulture Technologies* (CSB) Bangalore 287.

Doreswamy C, Govindan R, Devaiah MC and Muniswamappa MV (2004). Deterioration of cocoon traits of silkworm, *Bombyx mori L.* by the synergistic infection with late larval flacherie pathogens. *Karnataka Journal of Agricultural Sciences* **17** 345-348.

IrfanIllahi and Khan MA (2004). Silkworm and bed disinfectants. *Indian Silk* 11-15.

Jolly MS, Ullal SR and Narasimhanna (1987). Appropriate sericulture technique. *Hand Book of Practical Sericulture*.

Samson MV, Baig M and Jolly MS (1987). ReshamKeet Oushad- a prospective bed disinfectant against Grasserie and Muscardine. *Indian Silk* **25**(1) 16-18.

Sharma AK, Khatri RK, Babulal and Bhakuni BS (2006). Usages of Bed Disinfectants for Enhancing Cocoon Productivity. *Regional Seminar on problems of Sericulture as an Economic Enterprise in North West India* 216-18.

Shiva Shankar (2003). Effective use of lime and bleaching powder as surface disinfectants for mulberry silkworm cocoon crop success. M.Sc. (Seri.) Thesis, UAS, Bangalore 45.

Subbarao G, Chandra AK and Battacharya J (1992). Effect of bleaching powder and lime against grasserie and muscardine diseases of the silkworm, *Bombyxmori L.* *Indian Journal of Sericulture* **31**(1) 37-40.

Swathi HC, Vijayendra M and Nagaraj SB (2014). Revalidation of Bed Disinfectant Practices Followed By Farmers In Rearing Of Silkworm *Bombyx mori L.* **7**(1) 1-7.