Sericulture is an agro cottage based industry the end product of which is silk. It is a natural fabric, animal oriented and produced from silkworm. There are gaps in the industry, which need to be filled up so as to improve its productivity, quality and sustainability. Mulberry sericulture dominates other silk sectors, as it enjoys a lion’s share of around 89% of the total raw silk production in the country. Mulberry silkworm, *Bombyx mori* L belonging to family *Bombycidae*, produces the best quality of yellow or white silk among different varieties of silk produced in the country. It is monophagous, consuming only the leaves of the Mulberry plant.

Silk has been known and used in India from at least the Vedic period. Knowledge of weaving in India is comparatively more ancient, since the references available are to silk fabrics of brilliant colour and texture and so on. References of silk in ancient Hindu literature tell us that ‘the greatest weaving magicians in the world’ came from Kashmir. Indian sericulture is unique in several ways. While it is the only country that commercially produces all the four types of silk – visc., mulberry silk, tasar silk, eri silk and muga silk – it is the only country that is consuming over 80% of the silk fabric production within the country.

Silk is a way of life in India. Over thousands of years, it has become an inseparable part of Indian culture and tradition. No ritual is complete without silk being used as a wear in some form or the other. Silk is the undisputed queen of textiles over the centuries. Silk provides much needed work in several developing and labour rich countries. More than 10 million farmers raise silk in China today. Sericulture is a cottage industry par excellence. This industry provides employment nearly to three five million people in our country. Sericulture is cultivated in Karnataka, Bengal, Tamil Nadu, Andhra Pradesh, Jammu & Kashmir, Gujrat, Kerala, Maharashtra, Uttar Pradesh, Rajasthan, Bihar, Orissa etc.

Mulberry, the *Morus alba* L. (Morus is the Latin word for Mulberry) belongs to family Moraceae and it is cultivated in more than 58 countries in the world. In India, Mulberry is cultivated in the states of Karnataka, Andhra Pradesh, Tamil Nadu, West Bengal, J&K (5 traditional States), Manipur, Maharashtra, Assam, Bihar, Diarchal Pradesh, Uttaranchal, Uttar Pradesh, Kerala, Orissa (non-traditional States)
Synopsis of the thesis

and NE States. Different species and varieties of *Morus* are relished by Mulberry silkworm in different geographical areas of the country.

Mulberry (*Morus sp.*) is a fast growing, deciduous, deep-rooted perennial tree that grows throughout temperate, sub-tropical and tropical regions. There are at least 24 species and 100 varieties that vary in habitat, yield and nutrient content. It is estimated that one tonne of mulberry leaf is required to feed silkworms emerging from one ounce (28.3 grams) of eggs, which will yield 25-30 kg of cocoons. One hectare of fertile land can yield 15-40 tonnes of mulberry leaves per year; plants in temperate regions yielding half that of plants in tropical regions.

Marathwada region has great potential for sericulture; its environment is good for this industry. Secondly it adjoins Karnataka, the pioneer sericulture state in India and well facilities for transport. It has been proved that mulberry silkworm rearing is technically feasible and economically viable in Marathwada region. The availability of irrigation water in the command area of Jayakwadi, Sidheshwar, Yeldari and Manjara projects has further brightened the prospects of sericulture in Marathwada. In 7 talukas of Aurangabad district about 32 villages have sericulture activities with mulberry acreage of about 91.50 acres covering 67 farmers during 2009-10. 40% of the mulberry area is available in four villages namely Pokhari, Dongergaon, Pathari and Kasanpur. The remaining 60% is scattered 28 villages where area ranges 1.00 to 4.00 acres. The V1 variety in district accounts about 94 % and remains 6% for S 1635 and S 36 (District Sericulture Office, Aurangabad, DOS, Maharashtra).

The thesis entitled “Studies on Rearing Performance of *Bombyx mori* L. and the Pests Associated with Mulberry Garden.” Will be presented with preface, Introduction, Materials and methods, Results, Discussion with summary and Bibliography section. In the thesis the work carried out on the following lines will be incorporated as

2. The plant parasitic nematodes associated with mulberry garden.
3. Taxonomic study of plant parasitic nematodes associated with mulberry garden and their fluctuations.
4. Study of insects and molluscan pests associated with mulberry garden.

The first chapter of the present study includes the efficiency studies on the effect of certain plant extracts on silkworm growth. Although in Maharashtra, not much extensive work has been done on the rearing performance of *Bombyx mori* L. using various plants extracts. Plant extracts under study shows positive impact on biological parameters of *Bombyx mori* L. In Aurangabad region is not developed with the sericulture organization because lack of research on this field, due which we consider this point in mind do the same thing. Generally laboratory condition work shows better results but sometimes on field such trials fails, so ignore this fact the total work of rearing as well as reeling is carried out on farmer fields. The present study play very important role in improvement of silk quality and quantity which is in turn helping to farmer to improve their economical status.

In the present study the plant extracts of *Ziziphus jujuba* L. and *Ficus racemosa* L. with concentration (1:2, 1:4 and 1:8) were used to analyse their impact on the biological parameters of silkworm *Bombyx mori* L. The characters considered out from larval weight, mortality, cocoon weight, shell weight, pupal weight, shell ratio, filament length, filament weight, denier and No. of filament breakages were investigated. The results are very interesting and positive for all the biological character of *Bombyx mori* L. under study.

The second chapter deals with studies carried out on the monthly population fluctuation of Tylenchida, Dorylaimida, Mononchida and nematodes belonging to the other orders. The study was carried out from six different mulberry field of Aurangabad district, Maharashtra, India. Soil samples were collected from respective mulberry field for 2 annual cycles from June 2009 to May 2011. The population data was collected and analyzed. Different soil abiotic factors like soil moisture, soil temperature and soil pH were also estimated and noted down in every month for same period. The present investigation study shows that, there is variation in population of plant parasitic nematode and have influence and effect of the Soil temperature, moisture and pH on the population of these plant parasitic nematodes. The effects of
these soil factors on nematode population have been investigated through correlation and regression analyses.

In third chapter the taxonomic study of plant parasitic nematode associated with mulberry garden revealed that, there are nematodes belonging from total 4 main orders. Tylenchida order having genus are as *Meloidogyne*, *Rotylenchus*, *Helicotylenchus*, *Pratylenchus*. Order Dorylaimida having genus are as *Eudorylaimus*, *Mesodorylaimus*, *Aporcelaimellus*, *Discolaimus*, *Xiphinema*. Mononchida order having genus is as *Mylonchulus* and Rhabditida order having genus are as *Acrobeles* and *Mesorhabditis* were study.

In fourth chapter, study was carried to find out on insect and molluscan pests associated with mulberry garden. There is about 35 insects were found from 6 main orders namely Hemiptera (7) are *Tessaratoma*, *Nezara*, *Dysdercus*, *Empoasca*, *Aonidiella*, *Maconellicoccus*, *Oxyrachis*. Coleoptera (6) are *Aparino*, *Cryptogonus*, *Chiloloba*, *Chrysocoris*, *Psiloptera*, and *Deloyala*. Lepidoptera (9) are *Catopsilia*, *Eurema*, *Melanitis*, *Papilla*, *Spilosoma*, *Spodoptera*, *Diphania*, *Amasacta* and *Amata*. Orthoptera (5) *Neorthacris*, *Gryllus*, *Trigonidium*, *Acrida*, *Holochroa*, Isoptera (1) is termite *Odontoterme*. Hymenoptera (2) is wasp *Ammophila* and black ant *Camponotus*. Mantodea (2) are *Mantis*, *Deiphobe*. The molluscan pests of order Gastropoda are Land snail, *Rachis*, African snail, *Achatina* and slug *Laevicaulis*. The classification, their occurrence period, damage and symptoms was studied for collected pests.

The present work plays very important role in improvement of silk quality and to improve quantity of mulberry leaf which is in turn helping farmers to improve their economical status. This pest study also provides database knowledge for Aurangabad region farmers about the diversity of both nematodes and insect pests on mulberry garden occurring in different seasons. Hence the overall study will be beneficial for the sericulture industry.

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