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WEED INFESTATION IN MULBERRY GARDEN

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Aurangabad region has great potential for sericulture; its environment is good for this industry. The availability of irrigation water in the command area of Jayakwadi projects has further brightened the prospects of sericulture in Aurangabad region. In Aurangabad district during the year 2001-2002, there was increasing trend in sericulture industry. Total 90 villages with 277 farmers were carried out sericulture practice in this district with a total of 319 acres of Mulberry plantation. (Hiware *et al.*, 2004).

The studies were carried out at Sericulture Research Unit, Zoology Department, Dr. B. A. M University, Aurangabad (Maharashtra). Aurangabad is situated on 19^0 52′ North Latitude and 75^0 18′ East Longitude. The mean annual rainfall is about 750-850 mm. The mean temperature range varies from 15 °C to 43 °C (minimum during December and maximum in May). The mean relative humidity ranges from 55% to 95% (minimum during summer months and maximum during monsoon months).

There are two kinds of superficial formations, one consisting of upland soil derived from the decomposition of the rocks on the spot, peculiar to the hilly region, sand the other alluvial soil, deposited by water, belonging to the plains and to the hollows in the valleys of rivers. The higher portions of the valleys are likewise shallow and undulating, and much intersected with nallas, Black soils occasionally occur, resting either on calcareous beds or on partially decomposed globular basalt. In the river valleys lower down, a light-brown kankary alluvium is the prevailing soil.

About 15,000 plant species occur in India of which around 160 species are of economic importance. Over 300 wild relatives of crop plants are also reported from Indian sub-continent. Looking into the status of endangered, rare and threatened species particularly with reference to economic plants carry importance. It is obvious that such species should be collected and conserved before they finally disappeared forever. India is recognized as one of the twelve mega-biodiversity centers of the world and covers 11.90% of the world flora. In India, mulberry is not only cultivated for sericulture but for fruit, timber, fuel, and fodder too (A.Tikader and S.B.Dandin, 2006). Mulberry, a perennial deciduous plant is reported to have originated in China, the primary centre of the plant origin (Vavilov, 1926). Apart from the Indian species, namely *M indica*, *M*

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alba, M serrata, and *M laevigata,* which are considered as indigenous. Many mulberry varieties were introduced in India from other countries i.e., *M. multicaulis, M. bombycis, M. nigra, M. alba, M. rotun-diloba, M. cathayana,* and *M. ttiliaefolia* are the prominent ones. Thus the conservation of mulberry genetic resources has become very much essential to meet the desired objectives of long-term management and utilization.

Mulberry, which is mainly used as a lonesome of silkworm feed for silk production has been introduced in different countries of the world. The mulberry spreads from the temperate areas of North West and Central Asia, Europe, and North America through the tropics of Asia, Africa, and Latin America to the Southern Hemisphere (South Africa and South America). Mulberry varieties grow in various environments from sea level to altitudes of 4000 m and domestication of mulberry must have been started several thousand of years ago for silkworm requirement (FAO, 1990). Mulberry also grows from humid tropics to semi-arid lands like in the near East with 250 mm of annual rainfall and South West of the USA (Tipton, 1994).

The weeds in mulberry plantation retards growth, leaf yield and make the host susceptible to various diseases. Weeds growing in mulberry fields pose a serious problem for mulberry plantation; reducing the leaf yield significantly (Sikdar *et al.,* 1981; Srinivasan *et al.*, 1987; Shivakumar *et al.,* 1994).The Weed is considered as a plant where it is not desired (Bernchey, 1920; Bailey and Bailey, 1941). So from ecological and sericultural point of view, these plants are to be controlled.

The Weed is considered as a plant where it is not desired and unwanted plants grown in wanted area (Bemchey, 1920; Bailey and Bailey, 1941). The growing of weeds in mulberry garden leads the competition to mulberry plant for uptake of nutrients which causes to reduce the yield and quality of mulberry leaf (Muniyppa *et al.* (2000); Jaiswal *et al.* (2006). From the economic point of view, the growing of weeds in mulberry plantation pose a serious problem, which affects to reduce the yield of leaf and automatically which affects on the production of cocoon and silk (Isaiarasu *et al.,* 2005; Setua *et al.,* 2008). So weeding is very essential every year, whereby their effect can be minimized in mulberry garden.

A survey on weed infestation was carried out in mulberry garden in three different seasons, namely rainy, winter, and summer during study period of 2004-2005 and 2005-2006. Collected weeds were identified and placed under respective families with the help of Flora of Marathwada (V. N. Naik, 1998). The preparation of herbarium as methods for identification of weed specimen were collected from mulberry garden and dry it at normal temperature for two weeks,

which is wrapped in paper and then stick on herbarium sheet with the help of sticky substances.

Identified weed species in mulberry garden have been presented in Table 1. The occurrence of 58 weeds species belonging to 16 families names belongs: Acanthaceae (1), Amaranthaceae (4), Asteraceae (9), Caesalpinaceae (2), Commelinaceae (3), Convolvulaceae (5), Cyperaceae (1), Euphorbiaceae (4), Fabaceae (10), Lamiaceae (1), Malvaceae (2), Mimosaceae (2), Nyctaginaceae (1), Oxalidaceae (1), Poaceae (11), Tiliaceae (1). The highest numbers of weed species were observed in the family Poaceae, followed by the family Fabaceae and Asteraceae. These three were the dominating families in respect of higher number of occurrence of species in survey area.

Table 1. Weed infestation along with their respective families.

Sr. No.	Name of weeds	Family
1	*Justicia vahlii* Roth.	Acanthaceae
2	*Achyranthus aspera* L.	Amaranthaceae
3	*Alternanthera sessalis* L.	Amaranthaceae
4	*Amaranthus hybridus* L.	Amaranthaceae
5	*Amarnathus viridis* L.	Amaranthaceae
6	*Agerantum conzyoides* L.	Asteraceae
7	*Bidens biternata* (Lour.) Merr.	Asteraceae
8	*Cat harm us tinctorius* L.	Asteraceae
9	*Eclipta alba* (L.) Hassk.	Asteraceae
10	*Lagascea moilis* Cay.	Asteraceae
11	*Parthenium hysterophorus* L.	Asteraceae
12	*Synedralla nudUlora* L.	Asteraceae
13	*Tridax procumbens* L.	Asteraceae
14	*Vernonica cinerea* (L.) Less.	Asteraceae
15	*Cassia obtusifolia* L.	Caesalpinaceae
16	*CassiatoraL.*	Caesalpinaceae
17	*Commelia communis* L.	Commelinaceae
1 8	*Commelia eracta* L.	Commelianceae
19	*Commelina bengnalensis* JRA.	Commelianceae
20	*Convolvulus arvensis* L.	Convolvulaceae
21	*Ipomoea indica* (Berm.) Merr.	Convolvulaceae
22	*Ipomoea maxima* L	Convolvulaceae
23	*Ipomoea postigridis* L.	Convolvulaceae

Table 1. Cont'd.

Sr. No.	Name of weeds	Family
24	*Ipomoea sinensis* (Ders.) Choicy.	Convolvulaceae
25	*Cyperus strigosus* L.	Cyperaceae
26	*Acalypha indica* L.	Euphorbiacae
27	*Euphorbia hirta* L.	Euphorbiacae
28	*Euphorbiaprunfolia* Jaca.	Euphorbiacae
29	*Phyllamthus niruri* Auct.	Euphorbiacae
30	*Alysicarpus ovalifolius* Leonard	Fabaceae
31	*Crotalariajuncea* L.	Fabaceae
32	*Crotairia medicaginea* Lamk.	Fabaceae
33	*Crotalaria notonhi* Wt. and Ar	Fabaceae
34	*Goniogyna hirta* (Wilid) Au	Fabaceae
35	*Indigofera cordifolia* Heyne ex Roth.	Fabaceae
36	*Indigofera duthiei* Drum ex Naik	Fabaceae
37	*Indigofera glandulosa* Wendi.	Fabaceae
38	*Indigofera linfolia* L.	Fabaceae
39	*Tephrosiapurpurea* L.	Fabaceae
40	*Lavandula bipinata* (L.) 0. Ktze	Lamiaceae
41	*Sida acuta* Burm.	Malvaceae
42	*Sida cordfolia* L.	Malvaceae
43	*Mimosa pudica* L.	Minosaceae
44	*Neptunia triguetra* (Wilid) Benth.	Minosaceae
45	*Boerharia repens* L.	Nyctaginaceae
46	*Oxalis corniculata* L.	Oxalidaceae
47	*Brachiaria erucjformis* L.	Poaceae
48	*Cynodon doctylon* L.	Poaceae
49	*Dactyloctenium sindicum* Boiss.	Poaceae
50	*Digitaria stricta* Roth.	Poaceae
51	*Dimeria connivens* L.	Poaceae
52	*Eragrostis bjfaria* (VahI.) Bot.	Poaceae
53	*Eragrostis ciliaris* Staff.	Poaceae
54	*Eragrostispoacides* D. Beaul.	Poaceae
55	*Heteropogon contortus* (L.) D. beau!	Poaceae
56	*Iseilema laxum* Hack.	Poaceae
57	*Melanocenchrisjacguenmonti* Jaub.	Poaceae
58	*Triumfettapentendra* A.Rich.	Tiliaceae.

Environmental factors have great influence on phenological behaviour. This is described by Leith (1975) as the study of the timing with regard to biotic and abiotic factors and interaction of different phenophases of same or different species. From economic point of view, it is difficult to maintain weed free plantation. So, weeding will be very essential in the month of April, June, and November for survey area.

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