



Diseases Affecting Yield of Medicinal Plants and their Management

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Abstract

India is a country with rich biodiversity in vegetation. It 4th best country for medicinal plant diversity supporting worlds medicinal systems. The indigenous medicinal system is popular worldwide for its sanctity, low in cost and lesser in side effects. In this context the indigenous system got importance around the world now-a-days. Hence, the products of natural resources got demand at a higher rate. The countries rich in bio-diversity in medicinal plants solve the demand. Those plants are under pests resulting in less yield. Pest control is necessary for better healthy yield of medicinal plants. Study of disease causing organism helps to stop the life cycle of the pathogen which control pests.

Key words : Pathogen, pest; life cycle; indigenous; medicinal system.

Introduction : India has a rich culture of medicinal plants which is used for the treatment of diverse ailments from time immemorial. Herbal medicines are in great demand in both developed and

developing countries as a source of primary health care. Because of their attributes having wide biological and medicinal activities, high safety margins and Lesser coasts. Area of production of



medicinal plants is increasing as there is a big gap in production and demand. Like any other agricultural crops, medicinal plants are also subjected to the attack of pests. The various pests attacking same important medicinal plants; their identification; nature of damage and management are discussed below.

Discussion : Nearly 10 medicinal plants, their common name; Botanical name; name of the pest; common name of the pathogen were tabulated. In that table; description of pathogen adult and larva (or) nymphs were incorporated. The host part to the pathogen and loss to the plant is also explained.

Out of 10 plants *Catharanthus roseus* and *Rauwolfia serpentina* plants were attacked by the oleander hawk moth. On both of these plants the action of the Larvae is similar; feed on leaves

causing considerable loss of foliage. Hence, the production of *Rauwolfia* root and bark and in perry wrinkle production of flowers; roots and bark is lost. Tobacco caterpillar is the pathogen cause disease to glory lilly (*Gloriosa saperba*) and it also infect opium (*Opium poppy*). This pathogen feed voraciously on leaf Lamina and petiole. Later they eat floral parts and bore into fruits. Hence, the tobacco caterpillar cause damage to the leaves and losses the production of tubers in glory lilly (*Gloriosa superba*) and attack leaves of opium causing lesser floral production and fruits. They also feed on flowers influencing lesser fruit formation and attack fruits even. Hence loss is heavy in opium.

Onion thrips is another pathogen affecting *Phyllanthus neruri* and *Datura*. In *Nelavusiri* (*Phyllanthus neruri*) both nymphs and adults cause shriveling of leaves which are important source



of medicine. Whereas in *Datura* also leaves shrivel causing loss in photosynthesis ultimately in production of fruits.

Conclusion : As the importance of medicinal plant products demand is getting high there is an urgent need to increase the productivity through medicinal plants cultivation. When the increase in medicinal plant cultivation there the need of pest control is necessary. According to the saying "prevention is better than cure" better management of medicinal plants give more result. The awareness among medicinal plants cultivators protect the yield through pest management measures.

Management of Pests :

- 1) Summer ploughing expose soil inhabiting larva and pupa.

- 2) Hand picking and destruction of caterpillars in the field.
- 3) Beating the branches of Neem; acacia when the white grub adult beetles are present and torching the adults.
- 4) Spry application of NSKE 5% or Neem Oil 0.5% or Pongamia Oil @ 2% or Soil application of neem cake at 60 kg/Ac. Can be used to reduce the pest incidence.
- 5) Set up light traps to attract adults of white grub.
- 6) Soil application of phorate 10 Kg./Ha. Or Chloropyriphos 10 G/ @ 2 Kg. Ac./Ha. To control grubs in soil.
- 7) Sucking pests can be reduced by spaying acephate 75 Sp. @ 1.5 gm./Litre or imidacloprid 17.8% SI @ 1.5 ml./litre or fipronil 30 EC @ 2 ml./Lit.



- 8) Mite infestation can be reduced by spraying wettable sulphur @ 3 grm./Lit. ethion @ 2 ml./lit.; difenturon @ 1 grm./lit. dicofol 18.5 EC @ 5 ml./lit.; propergite 57 EC @ 2ml./lit.

Table showing pests on different medicinal plants pathogen and symptoms

S. No.	Name of the plant/Botanical Name	Disease causing organism	Scientific Name	Pathogen identification and nature of damage to plant
1.	Catharanthus roseus(L) Periwinkle/Bil lagamerce	a)The oleander hawk moth b)Leaf eating cater piller	Daphnis nerii Anomies flava fabricius	*Larvae are greenish blue in colour with eyespots on the body and an anal horn . Adult is a robust green moth with yellow marking. Larvae feeding voraciously on leaves resulting in severe defoliation. *It is sporadic pest. Larva is a green colour semilooper. Larva feed on leaves resulting in considerable foliage loss.
2.	Cassia angustifolia (vahl)/senna	a)The pierid butterfly b)Pea pod boarer	Catopsilia pyranthe linnaeus Etiella Zinckenella	Larva is cylindrical; green in colour with yellow colour bands. Adult is a small white colour butterfly. The larva feed on leaves and cause extensive damage. Larva is rosy with



				<p>purplish tinge. Adult moth has a white line on greyish brown fore wings and pale hind wings. The larva consume flower parts; young pods and seeds inside it. Poor yield results.</p>
3.	Rauvolfia serpentine(L) Sarpagandha	<p>a)Cut worm</p> <p>b) The oleander hawk moth</p> <p>c)Spotted leaf beetle</p>	<p>Agrotis sps.</p> <p>Daphnis nerii(L)</p> <p>Henosepilachna vigintioctopunctata</p>	<p>Larva is black colour with brown head. Adult moth is stout and has wavy lines and spots on brownish fore wings. Caterpillars cut seeding near the ground level. Larva are greenish blue colour with small spots all over body with an anal horn. Adult is green in colour bulky moth with yellow marking. Larvae feed on leaves resulting in defoliation. Adult lay eggs and larva feed on leaves leading to the loss in photosynthesis. Adults are light brick red in colour with 28 spots. Grubs are covered with spines, creamy yellowish in colour. Both feed on scraping chlorophyll resulting in pauperization of leaf leaving veins as skeleton.</p>
4.	Indigofena tinctoria(L)/ INDIGO	a)Indigo psyllid	Arytaina punctipennis cramer	Bugs are small, light brown in colour. Wings are spotted.



		<p>b) Leaf eating caterpillar</p> <p>c) Defoliator</p> <p>d) Tobacco caterpillar</p>	<p>Laphygma exigna hubner</p> <p>Dichomeris eridantis meyrick</p> <p>Spodoptera litura fabricius</p>	<p>Nymphs and adults suck the sap from tender shoots. Affected leaves curl up and form twisted knots at the top of the stem. .. (2).</p> <p>Adults are brown with bean shaped yellow spots in front margin. Larva are brown to grayish green in colour wavy lines down the back.</p> <p>Larva feed on leaves. They leave holes on leaves. It is a sporadic pest.</p> <p>Larva is a caterpillar in greenish yellow to dark grey colour.</p> <p>Larva feeds voraciously on the leaves.</p> <p>Adults are stout brown in colour. They have wavy white markings on forewings. Larva are velvety, black in colour black spots and white band on lateral sides. Neonatic larva are gregarious.</p> <p>They scrape out the green matter in the leaf leaving skeletonized appearance. They also feed on floral parts and bore into fruits.</p>
5.	Datura metal/ ummetta	a) Spotted borer	Earias insulana	Adults with yellow green wings with the wing span of 25mm. larvae brown in colour with white



		b)Onion thrips	Thrips tabaci lindeman	<p>longitudinal streak. They bore into tender shoots and fruits cause loss in the yield. Excreta can be seen out side the fruit.</p> <p>Adults are in different shades of yellow and grey in body colour. They are smaller in size maybe up to 0.4 inches in length. Female adults show fringed wings where as males without wings. Nymphs are without wings and coloured in different shades of yellow and grey.Both nymphs and adults cause shriveling of leaves.</p>
6.	Pests of Glory lily/Gloriosa superb	<p>a)Lily leaf cater piller or lily moth</p> <p>b)Red hairy cater piller</p>	<p>Poilytela gloriosae</p> <p>Anisacta lactinea</p>	<p>Adults are winged, fore wings are brown in colour with multicolored mosaic patterns.The colours are red; yellow and black. Hind wings colour is black. Their body colour is brown. Larvae is with mosaic paterus of white; black and red colours on their body. They measure 4-5 cm. in length. The larvae feed on leaves resulting defoliation.</p> <p>Adults mottles are stoutly built wings show black spots in white background. The edge of</p>



				the wing is scarlet red in colour. Larva is covered with numerous long hairs comes out of fleshy tubercles. Larvae feed on leaves. They eat in bulk quantity resulting like a grazed plant by animals.
7.	Pests of Nela vuseri Phyllanthus neruri	White fly	a) Bemisia labaci	Adult is yellow coloured very small insects. They coated by white wax layer. Nymphs are greenish yellow in coloured, scale like, pupa will be under leaf surface. Both suck the sap from stem resulting withering of that plant.
8.	Pests of Neem/ Azadirachta indica	1) Root grub b) Tea mosquito bug c) Slug catter piller	Holotrichia consanguinea Helopeltis antonii Lepida cramer	Adults look like beetles. Dull brown in colour with dark brown legs. Grubs are white in colour found in soil. Adult feed on leaves of Neem; cinchona etc., Grubs feed on roots of Neem and other crop plants. Nymphs are orange in colour small with long appendages, wingless, resembling spiders. The adult is reddish-brown with a black head; black and white abdomen. Thorax is red in colour. The adult look like mosquitoes in landing. Both adults and nymphs suck sap from leaves and tender shoots.



				<p>They damage nuts too. Maximum damage is done during flowering time.</p> <p>This pest is resultant of sporadic. Larva body is greenish in colour in combination with white lines and four rows of spiny soli tipped red or black. Adult moth has green wings with prominent dark patch at the base of each forewing. Caterpillar feeds on leaves and defoliates the plants.</p>
9.	Pests of Tulasi Ocimum sanctum lins	a)Lace wing bug	Cochlochila bullita	<p>Adult is dull obscure yellow in colour. Nymphs are black in colour. They are small; long flat, spinous. Nymphs and adults eat tender foliage and shoot causing chlorotic spots and stunting of plants. Leaf tips curl; dry up and fall down if the infestation is severe.</p>
10.	Pests of plumbago/ Plumbago zeylanica	a)Cottony cushion scale b)Chilli thrips	Icerya purehasi maskell Scirtothrips dossalis hood	<p>The body of female adults and nymphs are covered with wax yellow or white in colour. Male adults body is red in colour and are winged. Both adults and nymphs suck the sap of the plant decreasing vitality of the tree. Adults have heavily</p>

			<p>fringed wings. Nymphs are tiny; slender; fragile and yellowish straw in colour. Nymphs and adults cause damage by sucking the sap from the leaves. Leaves become crackled curl upward and shed.</p>
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periwinkle



Anomis flavo larvae



Indigofera tinctoria



Arytaina punctipennis



Gloriosa superba



polytela gloriosae

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