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## NEED OF AWARENESS PROGRAMME TO CONTROL THE LORANTHUS WEED – *HELIXANTHERA LIGUSTRINA*

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### Abstract

Khasi Mandarin which is known for its fine organic quality fruit from East Siang district of Arunachal Pradesh is declining in the last few years. *Loranthus* species viz. *Helixanthera ligustrina* is one of major factor for the declining of Khasi Mandarin. It is stem parasitic weed plant. Investigation revealed that to control this parasitic weed citrus grower need to know its habit, mode of seed dispersion, host plants, its life cycle and its management. Investigation also observed that it flowers during the month of April - May and the seed dispersal is mainly done by two birds viz. Plain flower pecker and Fire breasted flower pecker in June-July period under Arunachal Pradesh condition. The study also revealed that it caused lowering down its yield, fruit quality and finally killed the plant within 4-5 years after infestation. This parasitic weed is slowly spreading to other nearby orchards and needs emergency attention for the citrus growers for collaborative approach to control this parasitic weed.

**Key words :** Loranthus weed, parasitic, khasi Mandarin, citrus decline

### Introduction

The North Eastern Himalayan (NEH) region is endowed with favourable agro-climatic conditions for the growth of different citrus species and considered as the centre of origin of several citrus species (Gogoi *et al.* 2004). Citrus is an important crop of the people of the state of Arunachal Pradesh, a hill state in the North East Region of India. Among the different citrus species, Khasi Mandarin is the premier crop grown in all subtropical belt of Arunachal Pradesh. According to different region in Manipur and Mizoram, it is locally called as *Komla* and in Tripura as *Kamla*, Arunachal Pradesh as *Santra* and Meghalaya known as *Soh*. Cultivation of Khasi Mandarin is a source of livelihood to many people in the rural areas by the *Adi* tribe of Arunachal Pradesh. Cultivation of Khasi Mandarin is a source of livelihood to many people in the rural areas of this citrus growing belt of Arunachal Pradesh. Very poor productivity in this region is mainly attributed to unscientific cultivation of crop, injudiciously use of land resources, lacking of quality planting materials, citrus decline, citrus stem borer and loranthus stem parasite weed (Hazarika and Singh, 2013). The khasi Mandarin growing belt of Arunachal Pradesh is heavily infested with Loranthus weed especially in the East Siang district manifested in poor growth, low yield and quality of the fruit and finally death of the host plant within 4-5 years of infestation. Besides, the most infested zone by this parasitic weed is also occurred in the Renging village, which is considered for its fine quality of khasi Mandarin. However,



this destructive stem parasitic weed of loranthus is not common in other citrus belt of North East Region viz. Manipur, Nagaland, Tripura and Assam citrus belt. Keeping in this view, it is important to identify the *Loranthus* species found in East Siang region, its biology of life cycle and its dispersion factor to the host plant so that proper steps can be taken up for effective control of this destructive weed which cause the declining of citrus belt in Arunachal Pradesh.

### **Status of Loranthus stem parasite in East Siang district of Arunachal Pradesh**

The khasi Mandarin growing belt zone is mainly located in the East Siang district and West Siang district of Arunachal Pradesh. It was observed that maximum infestation of this weed was found in the Renging site and lesser infestation in the Bodak village, Oyan village and Panging village and still not reported or sighted of this weed in the orchards of Boying village. Out of this growing belt zone, khasi Mandarin grown in Renging village under the East Siang district is considered to be the best quality mandarin in Arunachal Pradesh. However, at present Renging which is famous for this fruit is heavily infested with this parasitic weed resulting in fruit quality decline, small size fruit and less number of fruits per plants and finally death of the infested plants after 3-4 years of infestation on it. Besides, the citrus orchards it was observed that loranthus infests many other non-citrus species like fig, neem tree, elephant apple and *Albizia* species. It infestation is also found in the shade tree of neem in the tea plantation also in Arunachal Pradesh (Singh et al., 2016). From the investigation, it was observed that the main dispersing agents of this weed were two small birds namely, Plain Flower pecker (*Dicaeum concolor*) and Fire-breasted flowerpecker (*Dicaeum ignipectus*) which cause declining of citrus belt of Arunachal Pradesh.

### **Control methods to control parasite Loranthus weed**

- I. Deepu and Habeeburrahman (2012) reported 1% of 2,4-D (auxin) around the pest trunk with cotton cloth strip soaked in herbicide, at the point of attachment to the host, after removing the outer skin to about 0.5 cm length.
- II. In India, *Loranthus pulverulentus* was successfully controlled by injection of Copper sulphate (CuSO<sub>4</sub>) and feroxone into the host plant (Kadamdi, 1954).
- III. Under East Siang district, it is mainly control by cutting down the affected branches of host plants before the maturity of fruit (June-July month) and applying with bordeaux paste to prevent the infection in the wounded part of the plant (Hazarika and Singh 2013).
- IV. In the heavily loranthus infested tree, there is high incidence of ants (*Crematogaster spp.*) at the citrus – mistletoe union and which make it difficult for pruning by climbing the tree. So, using standard tree pruner is the best way to control this noxious weed from the beginning of infestation. Similar opinion has been recorded (Ansare et al. 2013).
- V. Once the Loranthus infestation is heavily infested then it is difficult to prune the branches. Therefore, at the initial stage of infestation removal of the infected portion is the suitable method to control it.
- VI. Awareness program among the citrus growers is needed since its seed is spread by birds from one orchard to other as well as other non-citrus host plants are also there for this destructive weed.

### **Extension programmes needed for control and management of Loranthus stem parasite**

*Helixanthera ligustrina* Syn. *Loranthus ligustrinus* is a noxious weed particularly in the citrus growing areas under East Siang district of Arunachal Pradesh, which is a major Khasi Mandarin production zone. Heavy financial losses incurred to the citrus growers every year due to this parasitic weed. Till



date no effective and popular control measures and methods are developed for proper controlling and eradication of this weed. Scientific methods of control and management along with awareness programmes are needed to eradicate this weed as well as preventing from spreading to other orchards. The only available control methods with the growers are to prune the infected branches a few centimeters away from the point of infestation as the haustoria that penetrate deep inside the branches needs to be removed. Therefore, effective awareness program among the citrus growers are necessary in order to provide the knowledge about the weed biology and mode of dispersion and method of controlling of this weed in order to control the declining phase of citrus belt in Arunachal Pradesh.

### Conclusion

The destructive effect of this weed is increasing at an alarming rate in these regions. The infestation of loranthus (*Helixanthera ligustrina*) weed in the orchard belt of East Siang and West Siang district of Arunachal Pradesh is increasing day by day affecting many citrus growers which is known for its organic fine quality of mandarin. The economy of many farmers is mainly depended on this citrus crop which is declining day by day. But recently the citrus crop is badly affected by stem parasitic loranthus weed infestation. Planned trainings and management programmes should be taken up by the concern departments in liaison with the research institutions for a complete eradication of this weed and from further spread to other nearby unaffected orchards. That day will not be far where all the citrus belt of Arunachal Pradesh will be destroyed and no citrus fruits will be produced in this state if proper steps and control measures are not taken up timely by the competent authority and the researchers which need to educate the citrus growers to control this parasitic weed effectively.

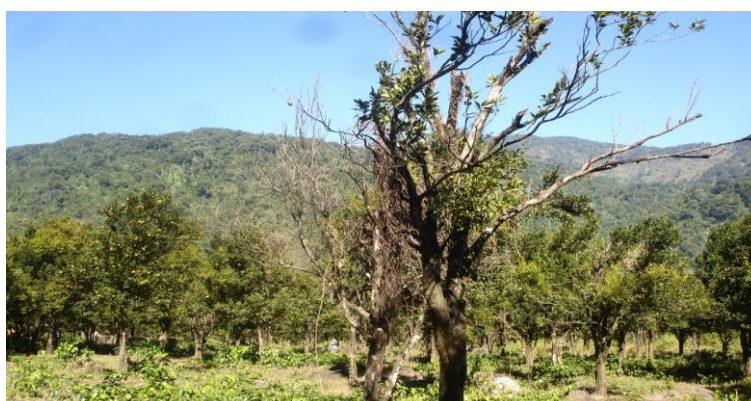


Fig. 1 Declining citrus orchard in Renging Village by Loranthus infestation



Fig. 2. Pruning of infected branches as effective control measure



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