Journal of Plant Development Sciences
Meerut, India

SHORT COMMUNICATION

HOST RANGE OF CHILLI LEAF CURL VIRUS

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Received-24.10.2024, Revised-11.11.2024, Accepted-28.11.2024

Abstract: Chilli *(Capsicum annum)* is the important vegetable cum spice crop belongs to the family Solanaceae. Chilli crop is prone to many viral diseases, among them Chilli leaf curl disease (ChiLCD) caused by Chilli leaf curl virus (ChiLCV) is one of the most devasting disease and it causes more yield loss. To study the host range of ChiLCV, 12 crop and five weed species were tested. Among the plants tested for host range, three crop species *viz*., *Solanum lycopersicum*, *Amaranthus tuberculatus* and *Nicotiana tabacum* were exhibited leaf curl symptom whereas three weed species *viz., Parthenium hysterophorus, Agricatum conyzoides* and *Euphorbia geniculate* were exhibited bushy plants, leaf curl and reduced leaf size symptoms respectively for ChiLCV.

Keywords: ChiLCV, host range, *Solanum lycopersicum*

INTRODUCTION

Chilli leaf curl is most devasting disease and causes the yield loss of 100 per cent in chilli (Senanayake *et al*., 2012; Singh *et al.,* 2013). Chilli leaf curl disease is caused by ChiLCV (Rajinimala *et al*., 2024). ChiLCV caused infection in wide range of plant and weed speices. *Amaranthus tuberculatus, Pentunia hybrida, Solanum lycopersicum, Mentha arvensis, Mirabilis jalapa, Osteopermum fruticosum, Carica papaya* were the possible source of ChiLCV infection (George *et al*., 2014; Nehra and Gaur, 2015; Venkataravanappa *et al*., 2016; Saeed *et al*., 2017; Jaidi *et al*., 2017; Mishra *et al*., 2020; Kumar *et al*., 2021)

MATERIALS AND METHODS

Host range of the virus

Different crop species *viz., Solanum lycopersicum, Solanum melongena, Luffa acutangula, Momordica charantia, Trichosanthes cucumerina, Cucumis sativus, Abelmoschus esculentus, Vigna unguiculata, Vigna mungo, Vigna Radiata, Arachis hypogea, Amaranthus cruentus* and *Nicotiana tabacum* (Table 1) and weed species *viz., Parthenium hysterophorus, Ageratum conyzoides, Euphorbia geniculate, Acalypha indica* and *Cleome viscosa* were selected to study the host range of ChiLCV (Table 2).

Seeds of each crop and weed species were sown in 10 pots containing a mixture of soil, sand and FYM in the ratio of 2:1:1 and kept inside an insect-proof glass house. Whiteflies were collected from the brinjal plants maintained in glass house and allowed for a pre-acquisition starvation period of 2.5 hrs and AAFP of 24 hrs. After that, 10 viruliferous whiteflies were released on each healthy crop and weed species and allowed for an IAFP of 24 hrs. The inoculated plants were kept in insect proof glass house and observed for symptom expression.

RESULTS AND DISCUSSION

Host range studies of ChiLCV

Host range study was conducted with twelve crop species. All the crop species were inoculated with ChiLCV through whitefly vector. Among the inoculated crop species, the plants such as *Solanum lycopersicum, Amaranthus tuberculatus* and *Nicotiana tabacum* were expressed curling symptom on 20 days after inoculation. (Table 3). This result matches with the findings of Senanayake *et al*. (2012).

Host range study was conducted with five weed species. All the weed species were inoculated with ChiLCV through whitefly vector. Among the inoculated weed species, *Parthenium hysterophorus, Ageratum conyzoides and Euphorbia geniculate* were expressed curling symptom on 20 days after

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inoculation respectively. As well as reduction in leaf size and bushy appearance of plants were observed on *Parthenium hysterophorus*, reduction in leaf size was examined on *Ageratum conyzoides* and leaf curling were observed on *Euphorbia geniculate* at 30 days after inoculation (Table 4). which is in accordance with the results obtained by Patel (2003).

Table 1. List of crop species tested for host range of ChiLCV

S.No	Host		
	Common Name	**Scientific Name**	**Family**
1.	Tomato	*Solanum lycopersicum*	Solanaceae
2.	Brinjal	*Solanum melongena*	Solanaceae
3.	Ridge gourd	*Luffa acutangula*	Cucurbitaceae
4.	Bitter gourd	*Momordica charantia*	Cucurbitaceae
5.	Snake gourd	*Trichosanthes cucumerina*	Cucurbitaceae
6.	Cucumber	*Cucumis sativus*	Cucurbitaceae
7.	Bhendi	*Abelmoschus esculentus*	Malvaceae
8.	Cowpea	*Vigna unguiculata*	Fabaceae
9.	Black gram	*Vigna mungo*	Fabaceae
10	Green gram	*Vigna radiata*	Fabaceae
11.	Groundnut	*Arachis hypogea*	Fabaceae
11.	Amaranthus	*Amaranthus tuberculatus*	Amaranthaceae
12.	Tobacco	*Nicotiana tabacum*	Solanaceae

Table 2. List of Weed species tested for host range of ChiLCV

S.No	Host		
	Common Name	**Scientific Name**	**Family**
1.	Parthenium	*Parthenium hysterophorus*	Asteraceae
2.	Billygoat weed	*Ageratum conyzoides*	Asteraceae
3.	*Wild Poinsettia*	*Euphorbia geniculata*	Asteraceae
4.	Acalypha	*Acalypha indica*	Euphorbiaceae
5.	Asian spiderflower	*Cleome viscosa*	Cleomaceae

Table 3. Transmission of ChiLCV from chilli to other crop species

S.No	Common Name	Scientific Name	No. of inoculated plants	No. of infected plants	Transmission (%)	Type of Symptom
1.	Tomato	*Solanum lycopersicum*	10	8	80	Leaf curling
2.	Brinjal	*Solanum melongena*	10	0	0	-
3.	Ridge gourd	*Luffa acutangular*	10	0	0	-
4.	Bitter gourd	*Momordica charantia*	10	0	0	-
5.	Snake gourd	*Trichosanthes cucumerina*	10	0	0	-
6.	Cucumber	*Cucumis sativus*	10	0	0	-
7.	Bhendi	*Abelmoschus esculentus*	10	0	0	-
8.	Cowpea	*Vigna unguiculata*	10	0	0	-
9.	Black gram	*Vigna mungo*	10	0	0	-
10	Green gram	*Vigna Radiata*	10	0	0	-
11.	Groundnut	*Arachis hypogaea*	10	0	0	-
11.	Amaranthus	*Amaranthus tuberculatus*	10	5	50	Leaf curling
12.	Tobacco	*Nicotiana tabacum*	10	10	100	Leaf curling

Table 4. Transmission of ChiLCV from chilli to other weed species

S.No	Common Name	Scientific Name	No. of inoculated plants	No. of infected plants	Transmission (%)	Type of Symptom
1.	Parthenium	*Parthenium hysterophorus*	10	8	80	Reduction in leaf size and bushy plants

2.	Billvgoat weed	*Ageratum conyzoides*	10	10	100	Reduction in leaf size
3.	*Wild Poinsettia*	*Euphorbia geniculata*	10	6	60	Leaf curling
4.	Acalypha	*Acalypha indica*	5	0	0	-
5.	Asian spiderflower	*Cleome viscosa*	5	0	0	-

CONCLUSION

Among the plants tested for host range of ChiLCV , three crop species *viz., Solanum lycopersicum, Amaranthus tuberculatus* and *Nicotiana tabacum* were exhibited leaf curl symptom whereas three weed species *viz., Parthenium hysterophorus, Agricatum conyzoides* and *Euphorbia geniculate* were exhibited bushy plants, leaf curl and reduced leaf size symptoms respectively for ChiLCV.

ACKNOWLEDGEMENT

The authors acknowledge the faculty of the Department of Plant Pathology for the facility and support

AUTHORS CONTRIBUTION

NR, JM, KE carried out the implementation and development of the work. DL and JS corrected the work and analyzed the data. All authors read and approved the final manuscript. All the authors read and approved the final manuscript.

COMPETING INTEREST

The authors declare that they have no competing interests.

Funding: Tamil Nadu Agricultural University (TNAU), Tamil Nadu, India funded the study

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