

## Host Range Studies of *Botryodiplodia theobromae* Pat.

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### ABSTRACT

Rose is one of the important flower crops and grown more or less in North Gujarat. Among different diseases, die-back of rose caused by *Botryodiplodia theobromae* is one of the most dreaded diseases throughout the North Gujarat. Considering the seriousness of the problem, the present investigations were carried out to generate more information for developing suitable control measures. Host range studies comprising of different host plants belonging to various families. The pathogen could infect and produced die-back like symptoms on ber, nilgiri, guava, mango, citrus, custard apple and chilli, which were proved as wide host range of the fungus.

**Key words:** *Botryodiplodia*, Die-back, *Jatropha*, Spore suspension

### INTRODUCTION

*Botryodiplodia theobromae* has been reported to be occurring on a widerange of host species and causes several types of plant disease viz., die-back of mango<sup>7,4,16,17</sup>, stem canker of guava<sup>14</sup> die-back of rubber<sup>5</sup>, twig blight of sapota<sup>12</sup>, dieback of rose<sup>19</sup>, lesions and cymopsis of citrus<sup>3</sup>, die-back of rose<sup>10,19,6</sup>, stem canker of mulberry<sup>13</sup>, leaf spot of ber<sup>9</sup>, die-back of cocoa<sup>2</sup>, die-back of cashew<sup>11</sup>, dieback and bark canker of pear<sup>22</sup>, die-back of mimosa weed<sup>23</sup>, stem canker of eucalyptus<sup>18</sup>, twig blight of sapota<sup>12</sup>.

*B. theobromae* was also reported on several host plants and causes severe diseases viz., on *Tectonagrandis*<sup>20</sup>, on *Dendrobium* sp and *Garcinia mangostana*<sup>1</sup>, on *Anona squamosa*, *Pithecello biumdulcea* and *Aralia*<sup>8</sup>,

on *Lawsonia alba*<sup>2</sup>, on *Phaseolus vulgaris* and *Archis hypogia*<sup>15</sup>.

### MATERIALS AND METHODS

Different crops belonging to various families, generally found in North Gujarat area were selected for the host range studies of *B. theobromae*. Different host plants located at different places in Sardar krushinagar Dantiwada Agricultural University, Sardar krushinagar were tagged and inoculated at evening hours with spore suspension (10<sup>6</sup> spores/ml) of 15 days old culture of *B. theobromae*. Observation for the number of plants infected and symptoms development were recorded up to 30 days after inoculation. Re-isolation from infected plants were carried out by tissue isolation method.

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Common and botanical name of different tree species are depicted in Table-1.

## RESULTS AND DISCUSSION

Many host plant pathogens are highly host specific while other can infect various species belonging to different families. Such plants act as collateral host and play a vital role in over of a pathogen as well as in the outbreak of a disease. Hence, study on host range is very useful. With a view to know the host of *B. theobromae*, ten different fruit crops, species crops and agro forestry crops were inoculated with by cut end method and observations on infection and disease development were recorded.

The results presented in table 2 showed that after 30 days of inoculation, many plant species were infected and developed the symptoms of die-back. In ber (*Ziziphus mauritiana* Lam.), nilgiri (*Eucalyptus grandis*) infection was started early within 3-4 days after inoculation. The infected twigs become dark black and shriveled. In guava (*Psidium guajava* L.) and mango (*Mangifera indica*), infection started after 6-7 days of inoculation. The infected twigs become dark black and shriveled. In citrus (*Citrus lemon* L.) custard

apple (*Annona squamosa*) and chilli (*Capsicum annum* L.) infection started after 5-6 days and infected twigs become brownish to black. In aonla (*Emblica officinalis*), sapota (*Achras sapota* L.) and ratanjyot (*Jatropha curcas*) no any symptoms developed. On re-isolation from infected twigs of all plants, the identical fungus *B. theobromae* was yielded.

### Host range studies

Studies on the host range of a pathogen provide very useful information on the survival and carryover of a pathogen from year to year. Cross inoculation test with die-back of rose isolate *B. theobromae* on different fruit and spices crops showed that ber, chilli, citrus, guava, mango, nilgiri and custard apple were produced more or less similar to die-back.

Our results are in line with earlier workers. die-back of mango<sup>7,22,16,4,17,6</sup>, lesions and cymopsis of citrus<sup>3</sup>, die-back of rose<sup>10,19</sup>, die-back of *Annona squamosa*<sup>8</sup>, reported stem canker of guava<sup>14</sup>, twig blight of sapota<sup>12</sup>. Sharma *et al.*<sup>18</sup> reported that the *B. theobromae* caused stem canker of *eucalyptus* and this is coincide with our results. Hence, it can be concluded that *B. theobromae* isolated from die-back of rose is not host specific but have wide host range.

**Table 1: Common name, botanical name and family of different tree species**

Sr. No.	Common name	Botanical name	Family
1.	Aonla	<i>Emblica officinalis</i> Gaertn.	Euphorbiaceae
2.	Ber	<i>Ziziphus mauritiana</i> Lam.	Rhamnaceae
3.	Chilli	<i>Capsicum annum</i> L.	Solanaceae
4.	Citrus	<i>Citrus lemon</i> (L.) Burm. f.	Rutaceae
5.	Guava	<i>Psidium guajava</i> L.	Myrtaceae
6.	Mango	<i>Mangifera indica</i>	Anacardiaceae
7.	Sapota	<i>Achras sapota</i> L.	Sapotaceae
8.	Ratanjyot	<i>Jatropha curcas</i> L.	Euphorbiaceae
9.	Nilgiri	<i>Eucalyptus grandis</i>	Myrtaceae
10.	Custard apple	<i>Annona squamosa</i> L.	Annonaceae

**Table 2: Host range study of different tree species**

Sr. No.	Test plant	No. of plant inoculated	No. of plant infected	Per cent die-back infection
1.	Aonla ( <i>Emblica officinalis</i> Gaertn.)	5	0	0
2.	Ber ( <i>Ziziphus mauritiana</i> Lam.)	5	5	100
3.	Chilli ( <i>Capsicum annum</i> L.)	5	5	100
4.	Citrus ( <i>Citrus lemon</i> (L.) Burm. f.)	5	5	100
5.	Guava ( <i>Psidium guajava</i> L.)	5	5	100
6.	Mango ( <i>Mangifera indica</i> )	5	5	100
7.	Sapota ( <i>Achras sapota</i> L.)	5	0	0
8.	Ratanjyot ( <i>Jatropha curcas</i> L.)	5	0	0
9.	Nilgiri ( <i>Eucalyptus grandis</i> )	5	5	100
10.	Custard apple ( <i>Annona squamosa</i> L.)	5	5	100

### CONCLUSION

To find out host range of the pathogen *B. theobromae*, isolated from rose die-back were inoculated on different host plant belonging to various families. The pathogen could infect and produce die-back like symptoms on ber, nilgiri, guava, mango, citrus, custard apple and chilli, which were proved as wide host range of the fungus.

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