Effect of Culture Age on Virulence of Artificial Cytospora Infections in Prunus domestica

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ABSTRACT

Four-year-old President plum (*Prunus domestica*) trees were inoculated on the same day with cultures of *Cytospora cincta* that were 2, 3, 4, 5, 6, 8, 12, 16, and 21 days old. Virulence decreased with culture age, and cultures aged in sealed plastic containers appeared to retain given levels of virulence longer than those not stored in plastic. Phytopathology 60:1694-1695.

Additional key words: virulence, culture age.

Innumerable artificial *Cytospora* infections have been initiated in *Prunus* trees in Idaho over the past 18 years, yet consistency of virulence with a single isolate has been difficult to achieve. Many factors have been found to be involved, such as age, vigor, species, and cultivar of the host (1, 4), weather conditions (2, 3), presence or absence of other pathogens (5, 6), etc., yet the effect of small differences in age of cultures at inoculation has not previously been examined.

Fifty-four 4-year-old President plum trees (*Prunus domestica* L.) were selected for uniformity of size and vigor and set aside for simultaneous inoculations at a later date. *Cytospora cincta* Fr., isolate Cy-59 (Idaho code), a strain known to be a vigorous invader of *P. domestica,* was selected as the pathogen. Inoculum plates (20 ml Difco malt agar/plate) were prepared at intervals so that cultures 2, 3, 4, 5, 6, 8, 12, 16, or 21 days old could be inoculated to the President trees on the same day. Two identical groups of these plates (with unplanted control plates for each age interval) were prepared, one group being sealed in plastic bags and the other group left unsealed. All plates were stored in a 27-C incubator from the time of inoculum transfer until used on 30 June. The cultures stored in plastic bags tended to be much lighter in color (on 30 June) than those not enclosed in plastic.

On 30 June, each President tree was inoculated in two places (one high on a major branch and one low in the scaffold of a different branch) via the standard technique described earlier (6). Canker size in sq cm was measured approx every 2 weeks between 30 June and 25 September.

Virulence decreased with culture age, and those cultures stored in plastic bags (Fig. 1-A, B) appeared to retain given levels of virulence longer than those not stored in plastic (Fig. 1-C, D). In fact, enclosure in plastic appeared to overcome the initial slow transference of active mycelial growth from the inoculum plug to the new agar surface (see the virulence of the 2-day-old plates, Fig. 1-A vs. Fig. 1-C). Wounds on control trees ("inoculated" with sterile agar of appropriate age) healed normally without becoming infected.

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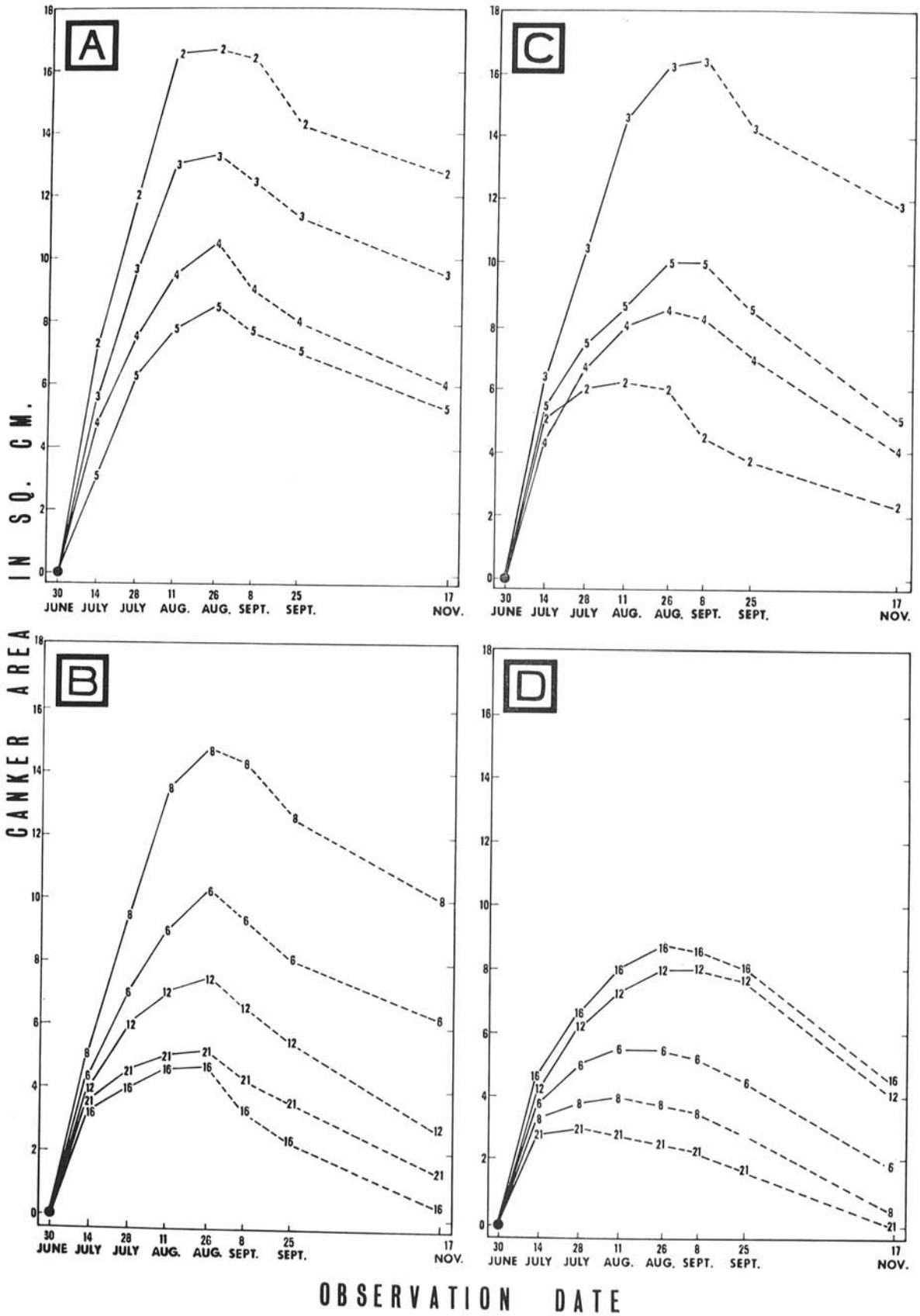
Fig. 1. Virulence of a *Cytospora* isolate when 2-, 3-, 4-, 5-, 6-, 8-, 12-, 16-, or 21-day-old cultures were used to inoculate 4-year-old President plum trees at the same time; one group of culture plates was sealed in plastic bags (A, B), an identical group was left unsealed (C, D), and both groups were stored in a 27-C incubator until the 30 June inoculation date. Each value represents the average for two cankers on each of three trees.


A
B
C
D
CANKER AREA IN SQ. CM.
0
2
4
6
8
10
12
14
16
18
30 JUNE
14 JULY
28 JULY
11 AUG.
26 AUG.
8 SEPT.
25 SEPT.
17 NOV.
OBSERVATION DATE