

**PITCH CANKER IN
CALIFORNIA:**

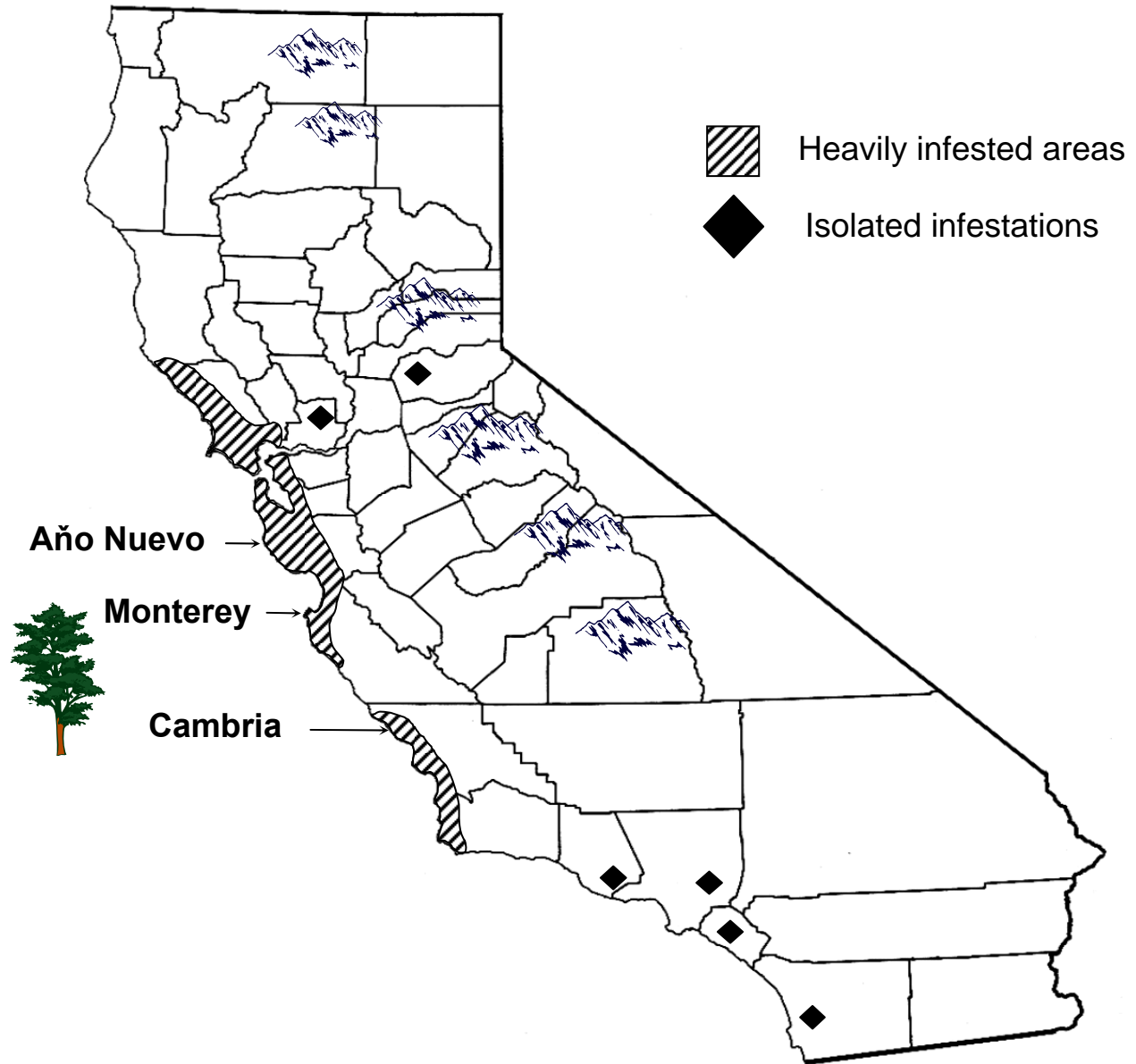
**CURRENT STATUS AND
STATEWIDE RISK**



Pinus radiata
(Monterey pine)



Pitch canker in California



SUSCEPTIBILITY OF DOUGLAS-FIR TO PITCH CANKER

COMPREHENSIVE TEST OF RESIDENT STRAINS

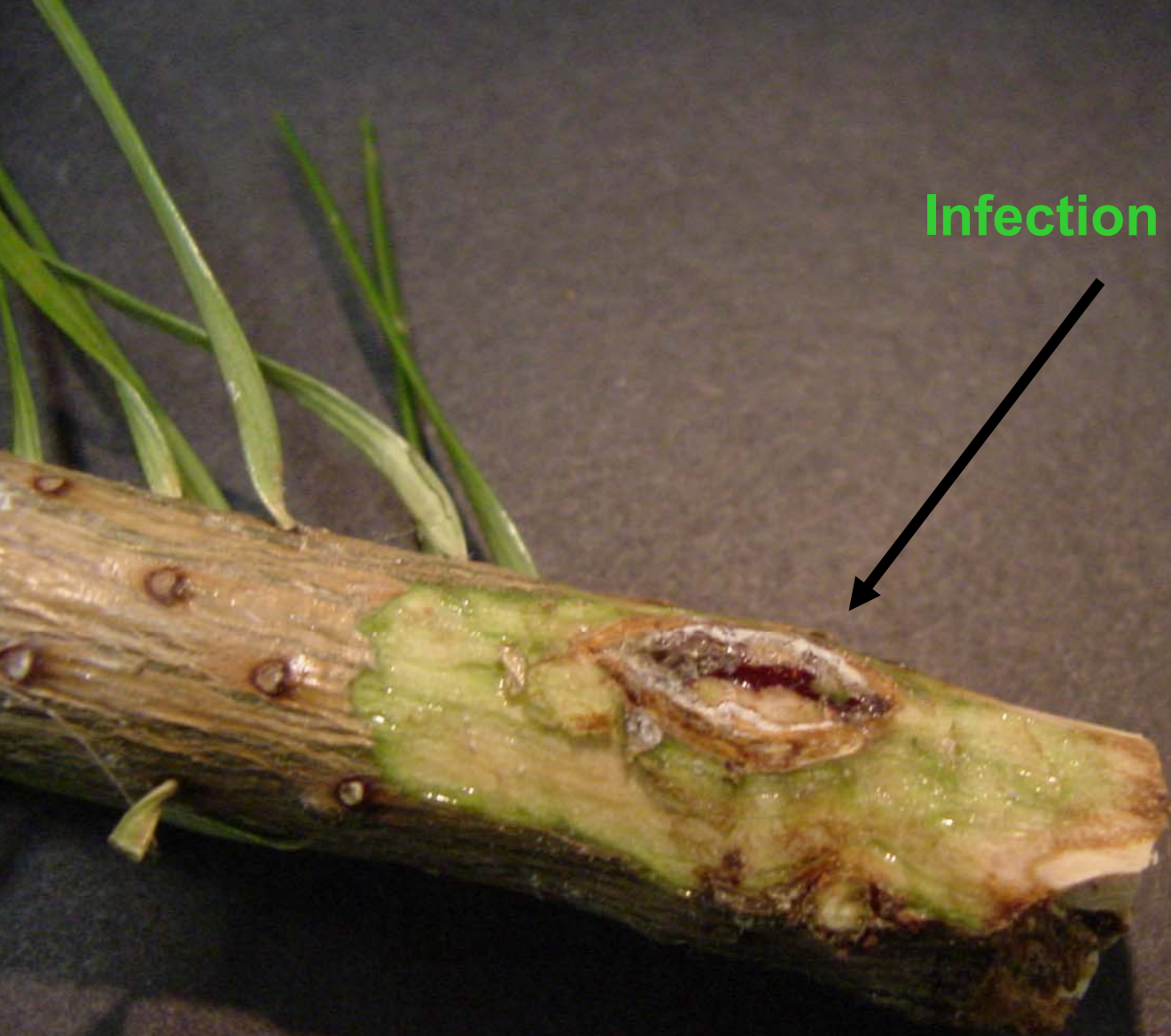
TEST OF EXOTIC STRAINS

TEST OF PROGENY FROM OUT-CROSSING

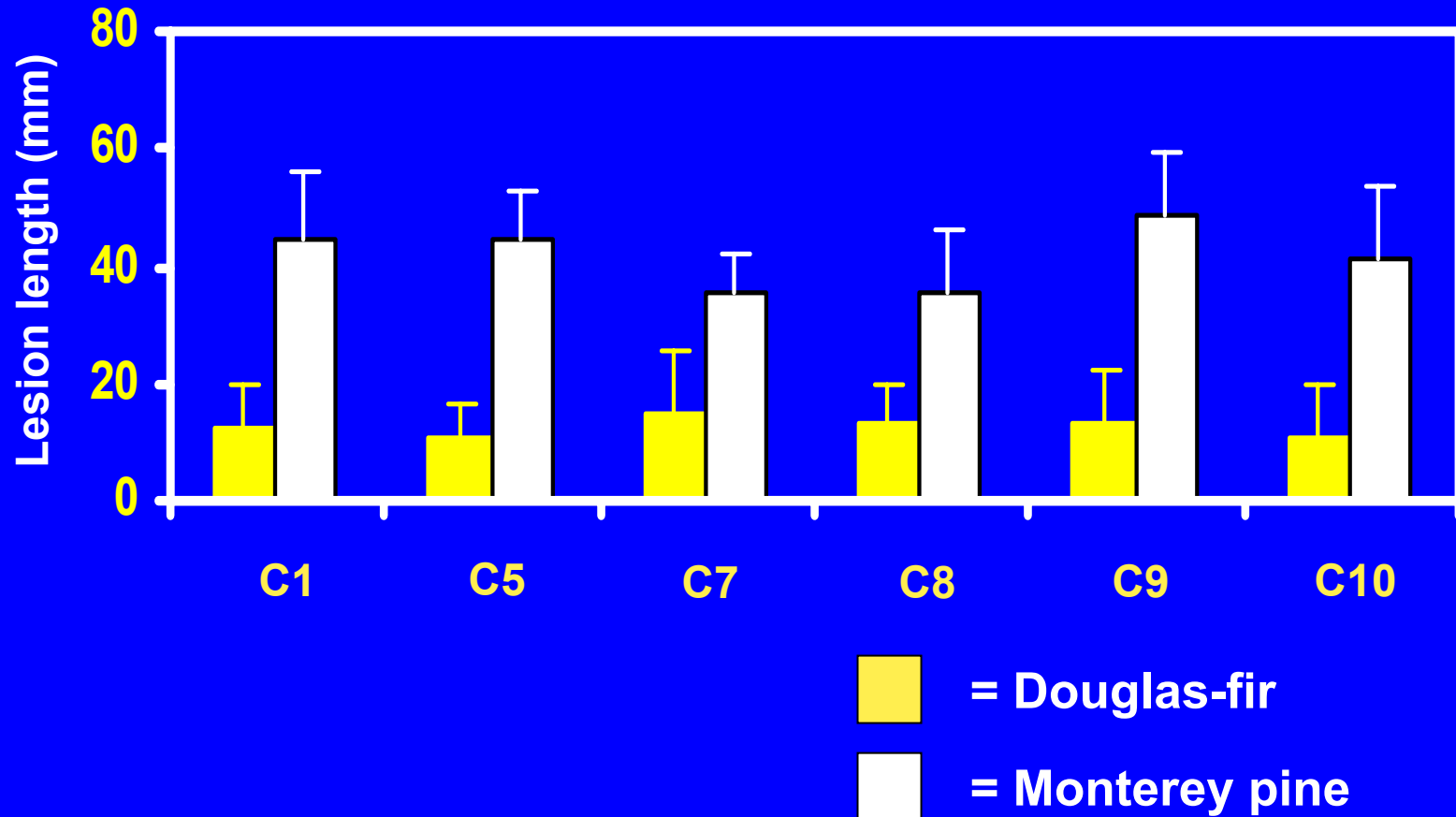
SUSCEPTIBILITY OF DOUGLAS-FIR TO PITCH CANKER



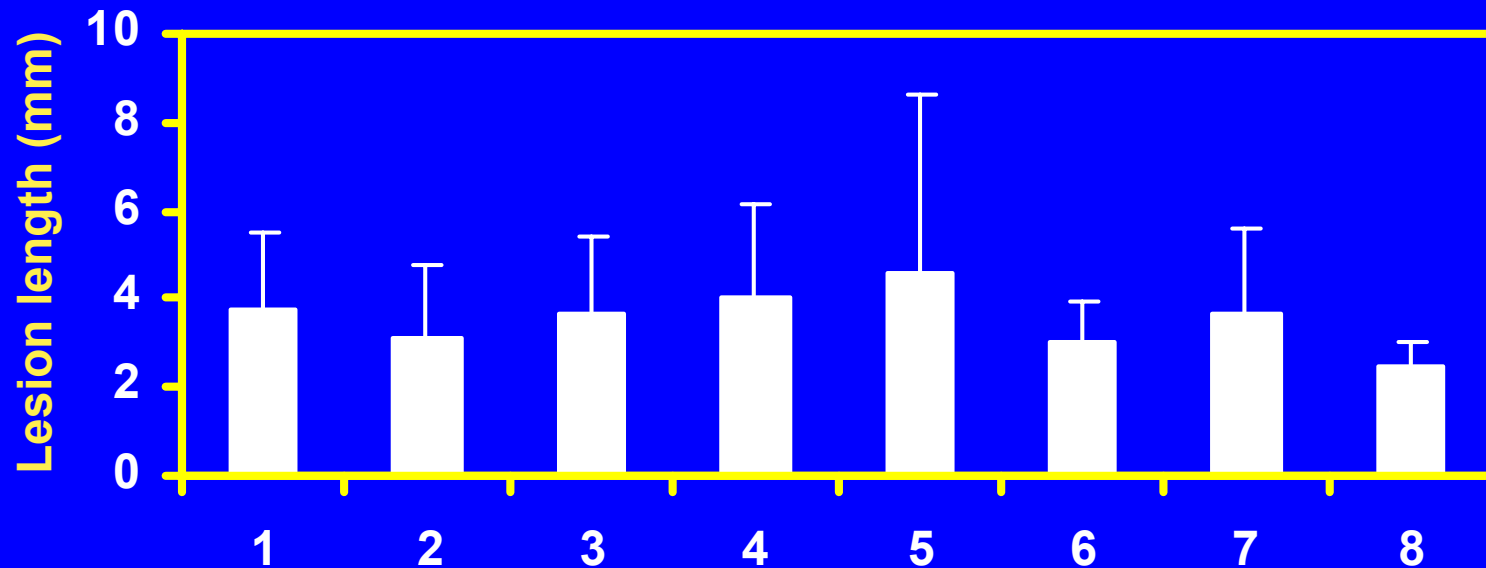
Infection site



Susceptibility to resident California strains



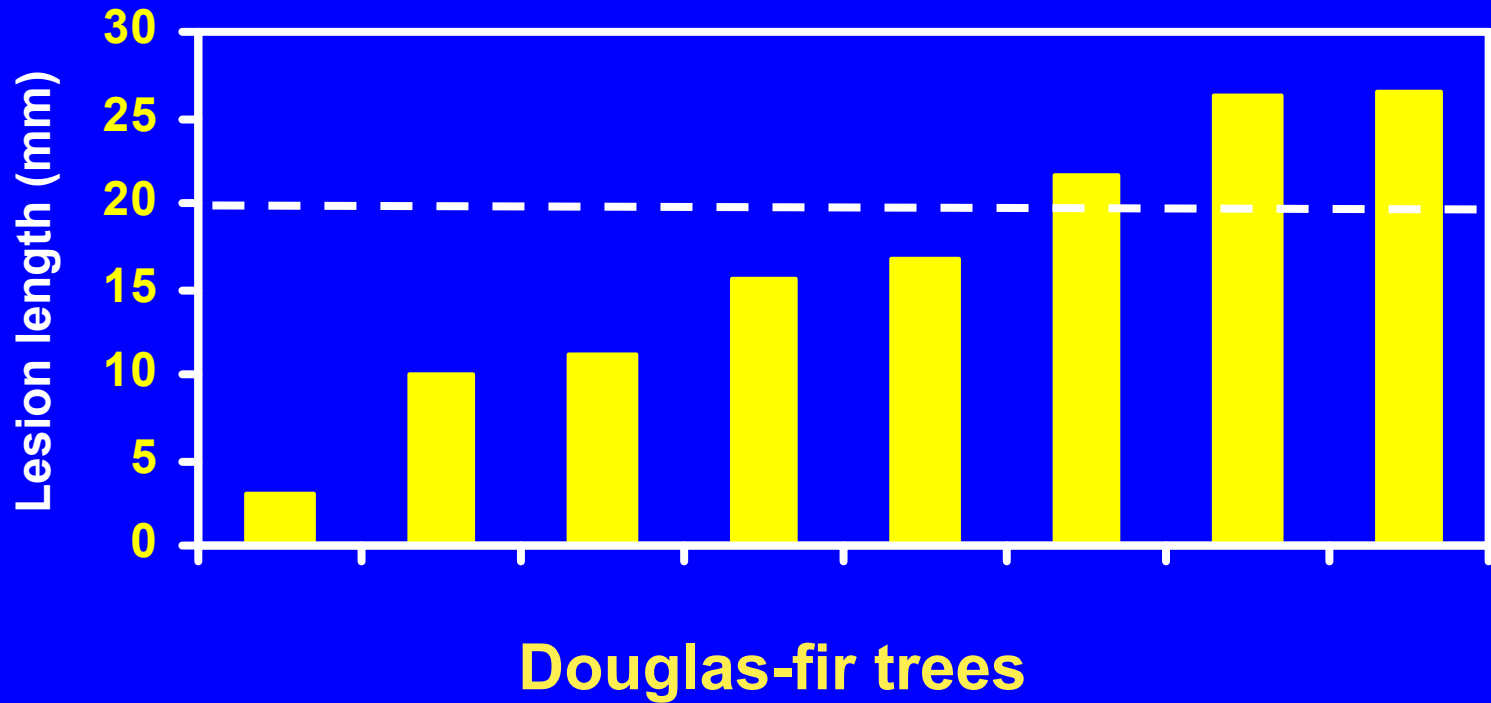
Exotic isolates of *Fusarium circinatum*



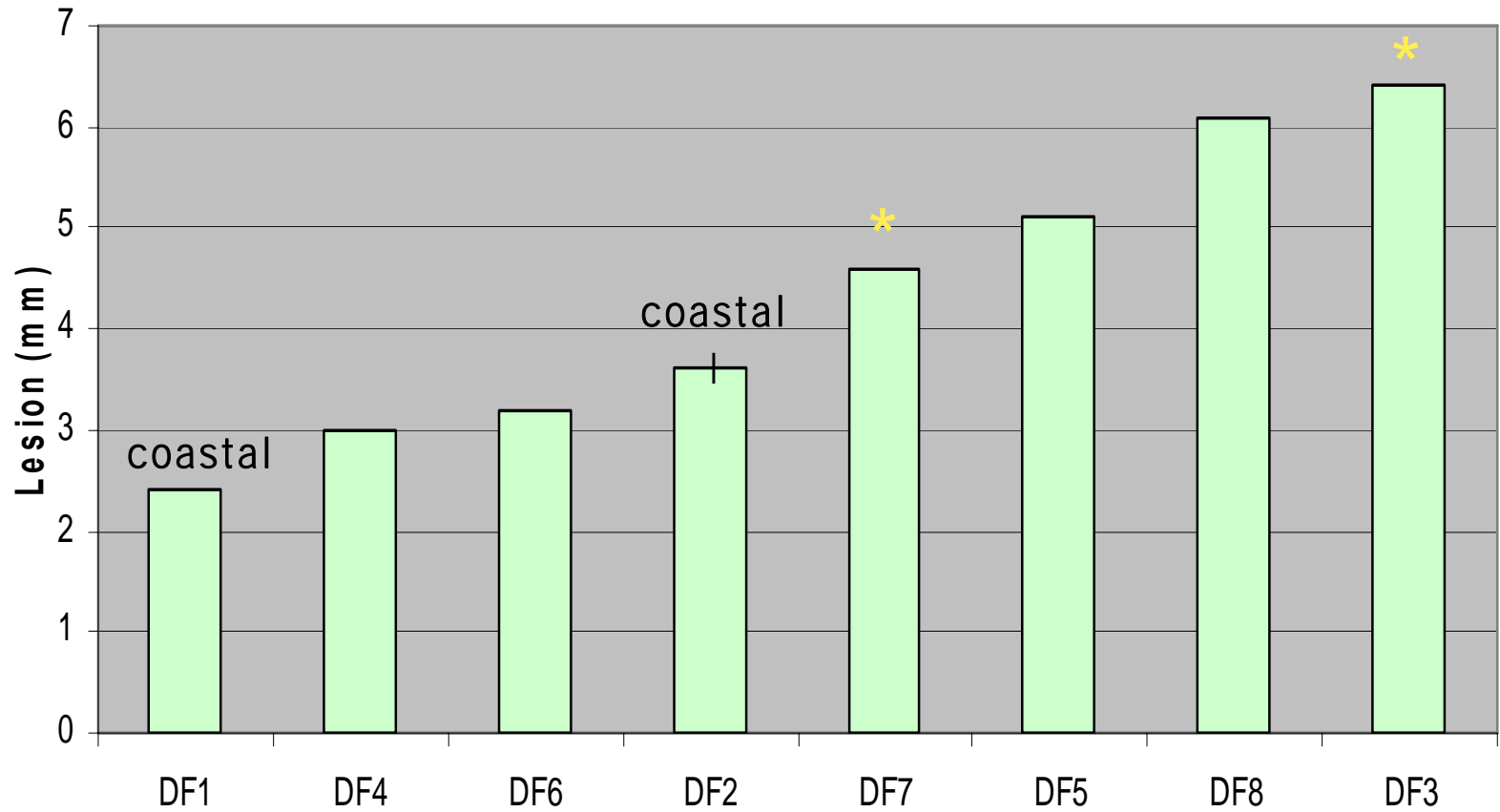
1,2 = Mexico; 3 = Japan; 4,5 = Florida; 6,7 = South Africa
8 = California



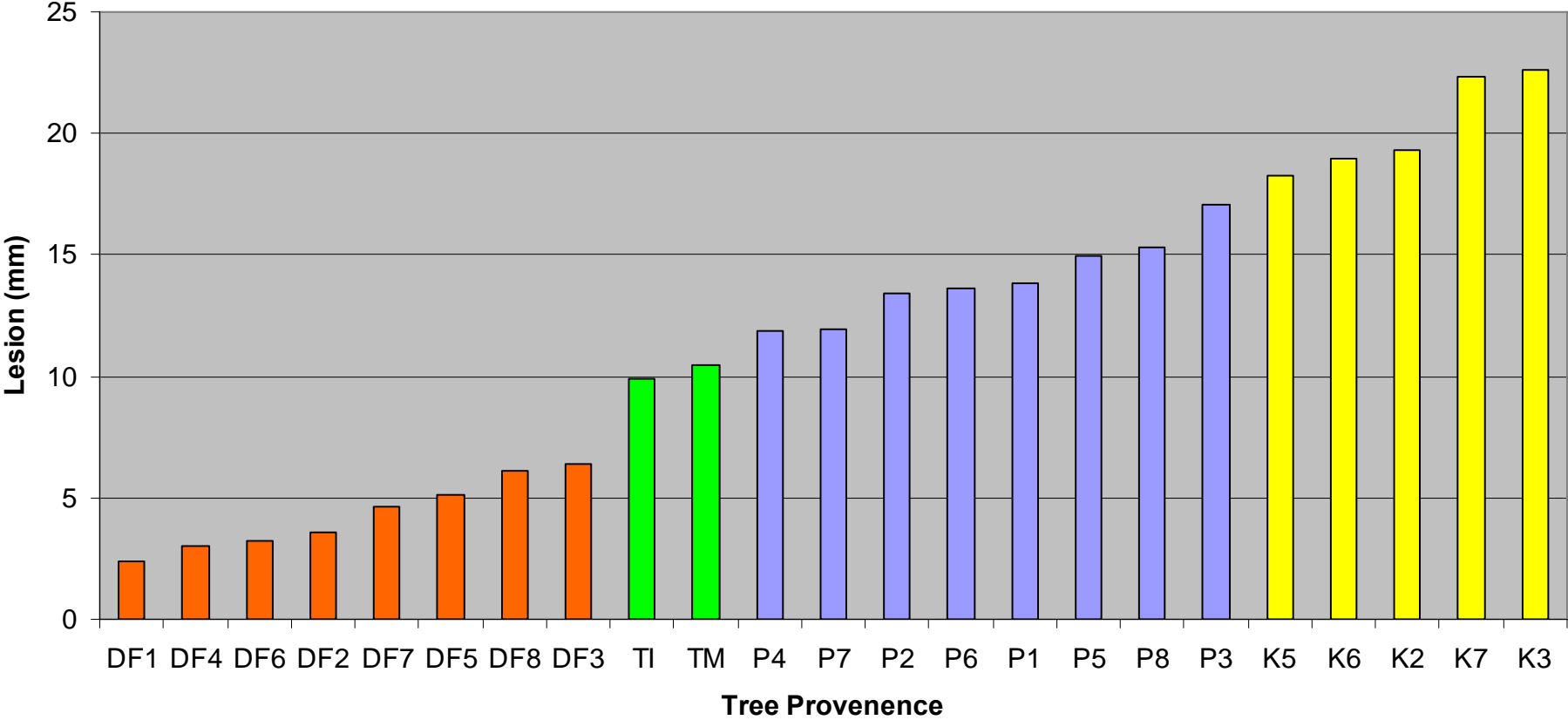
Susceptibility of Douglas-fir trees



Douglas-Fir Provenance Seedlings Susceptibility to *Fusarium circinatum*



Provenance Relative Susceptibility : Ranked by Average Lesion Length



CONCLUSIONS

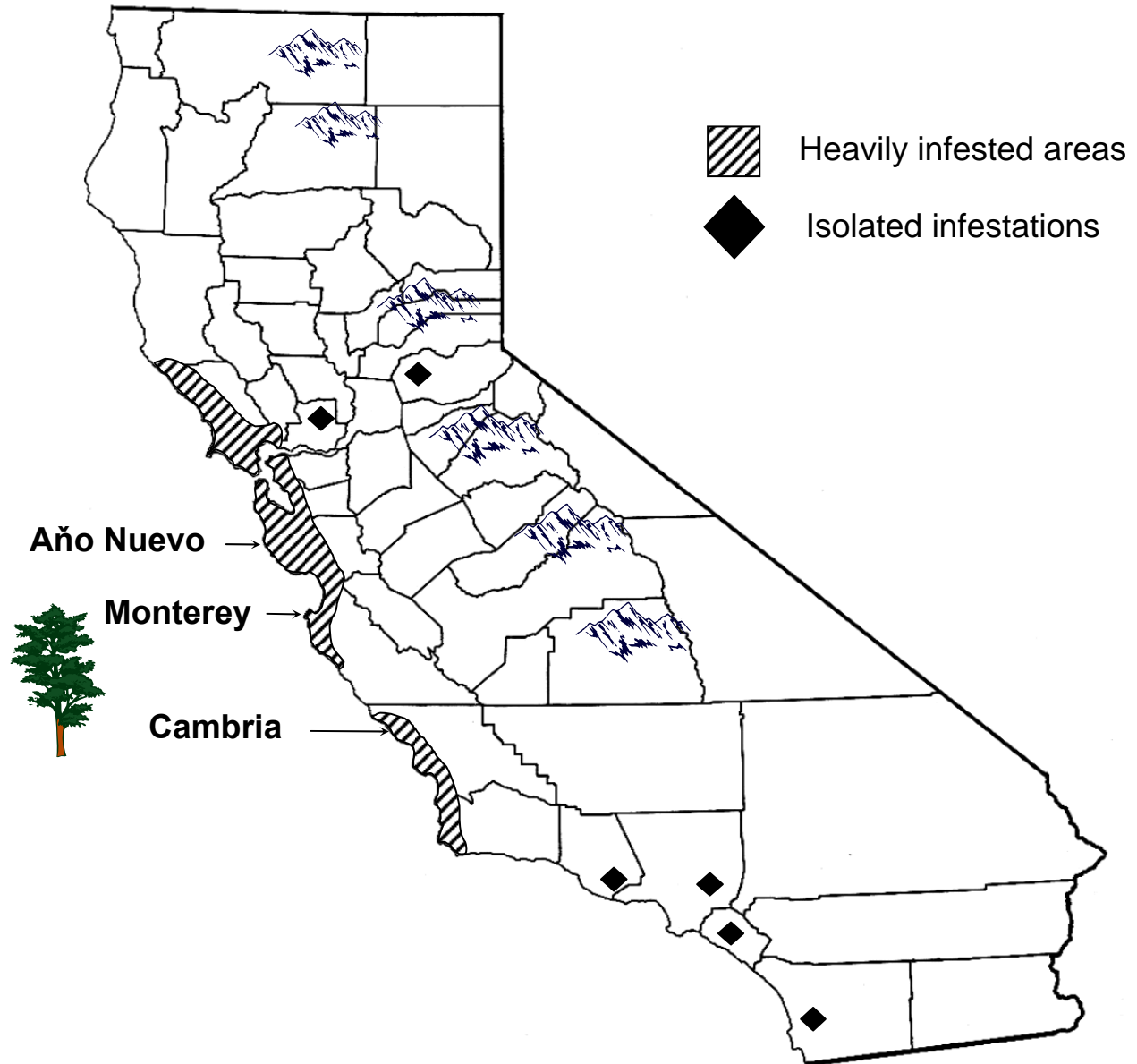
NO EVIDENCE OF SIGNIFICANT VARIATION
IN VIRULENCE TO DOUGLAS-FIR AMONG:

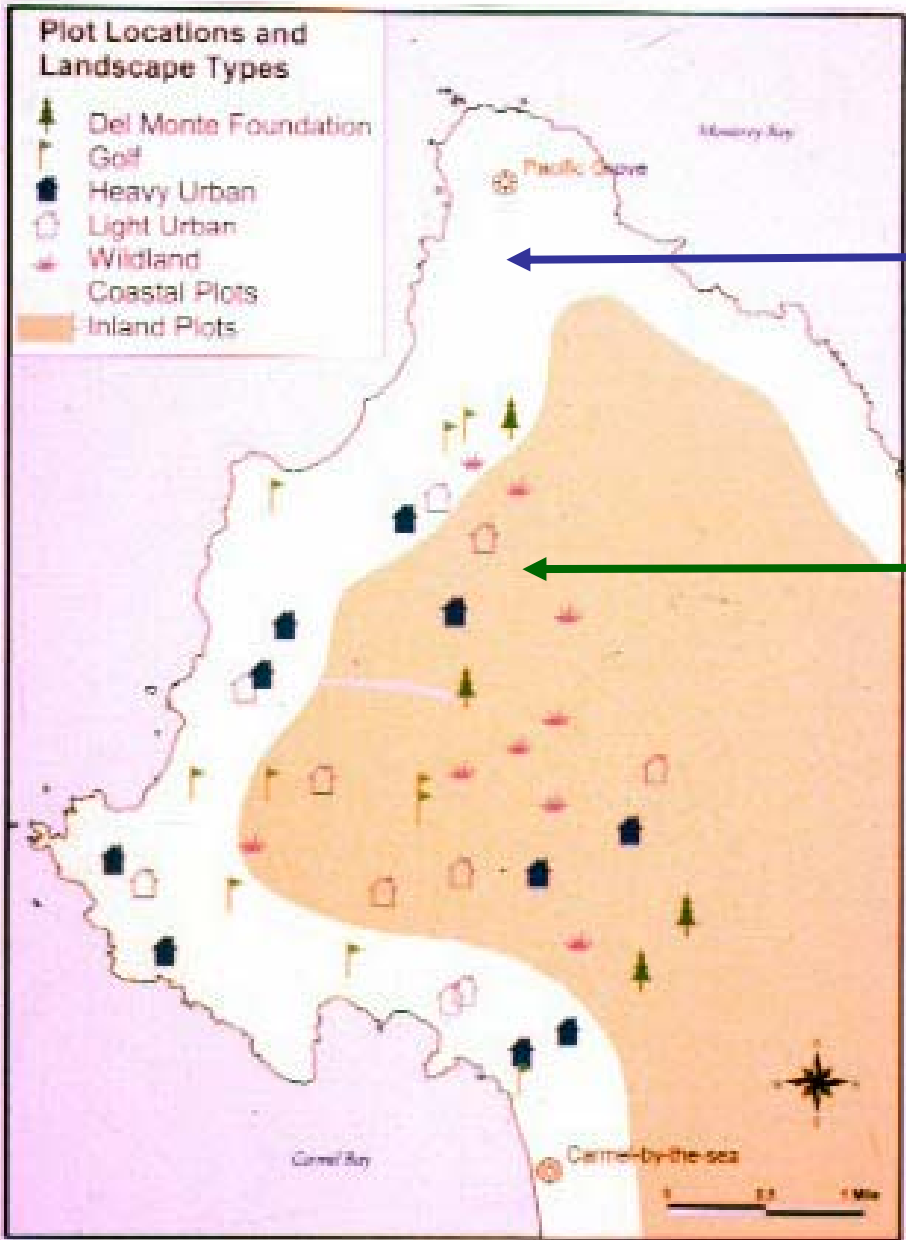
RESIDENT CALIFORNIA STRAINS
SELECTED EXOTIC STRAINS
PROGENY OF A CROSS BETWEEN CA STRAINS

DOUGLAS-FIR IS GENERALLY RESISTANT TO
PITCH CANKER

T. R. Gordon, et al. 2006. Susceptibility of Douglas-fir (*Pseudotsuga menziesii*) to pitch canker, caused by *Gibberella circinata* (anamorph = *Fusarium circinatum*)
Plant Pathology: In press

Pitch canker in California

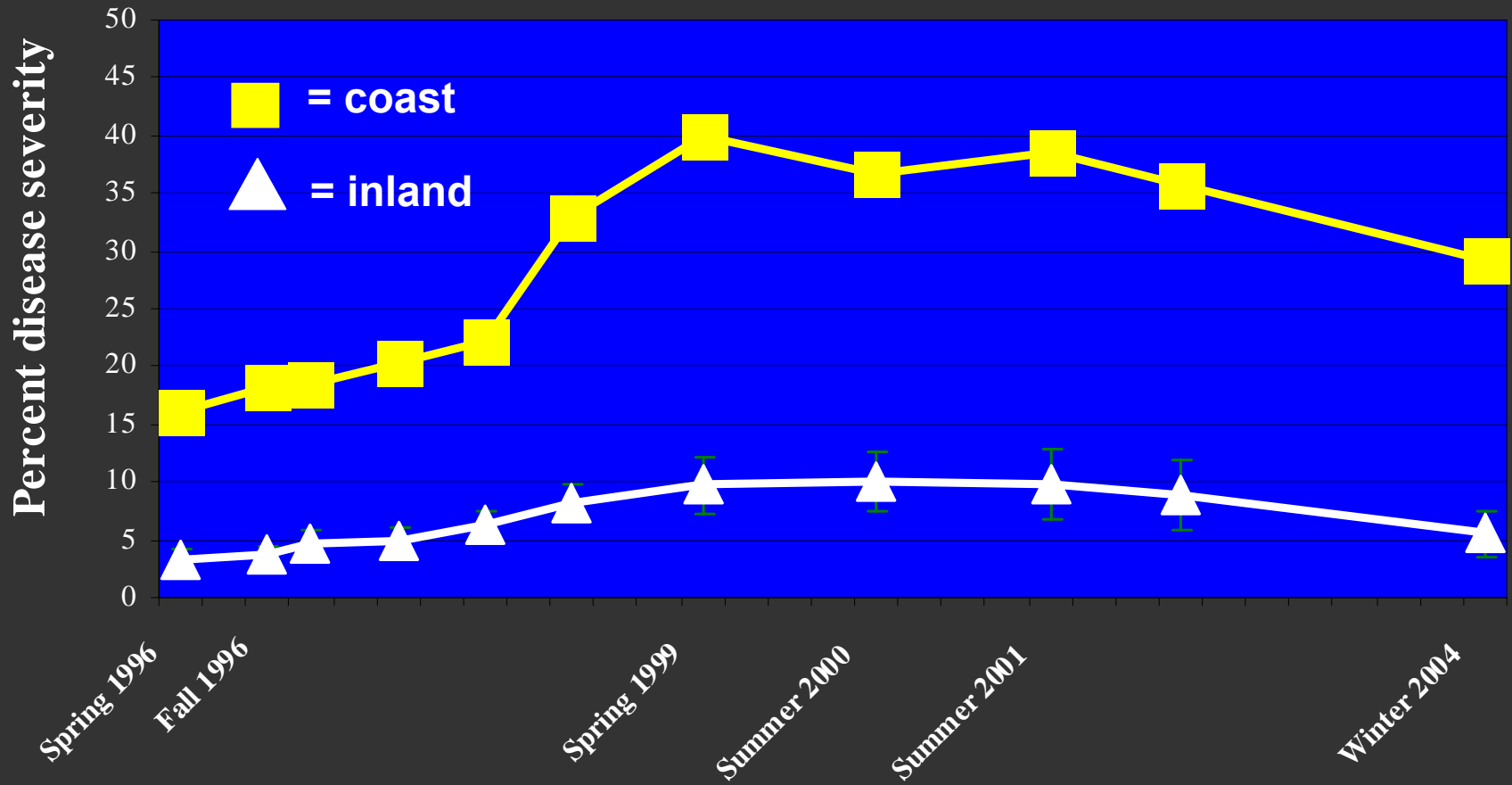




Coastal

Inland

Disease Progress with Respect to Geographic Location



Limitations on infection

Susceptible hosts

Availability of inoculum

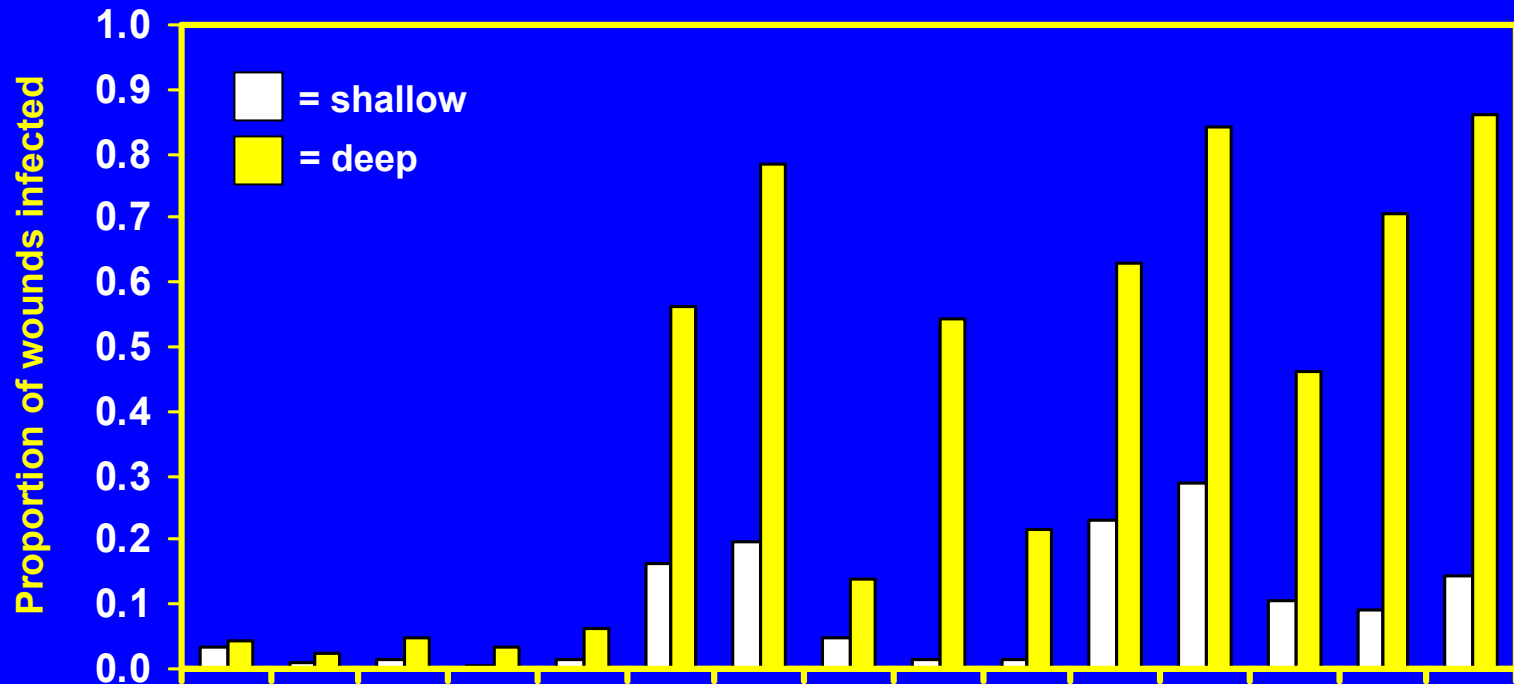
Environmental conditions

**Wound branches where
are spores are present**



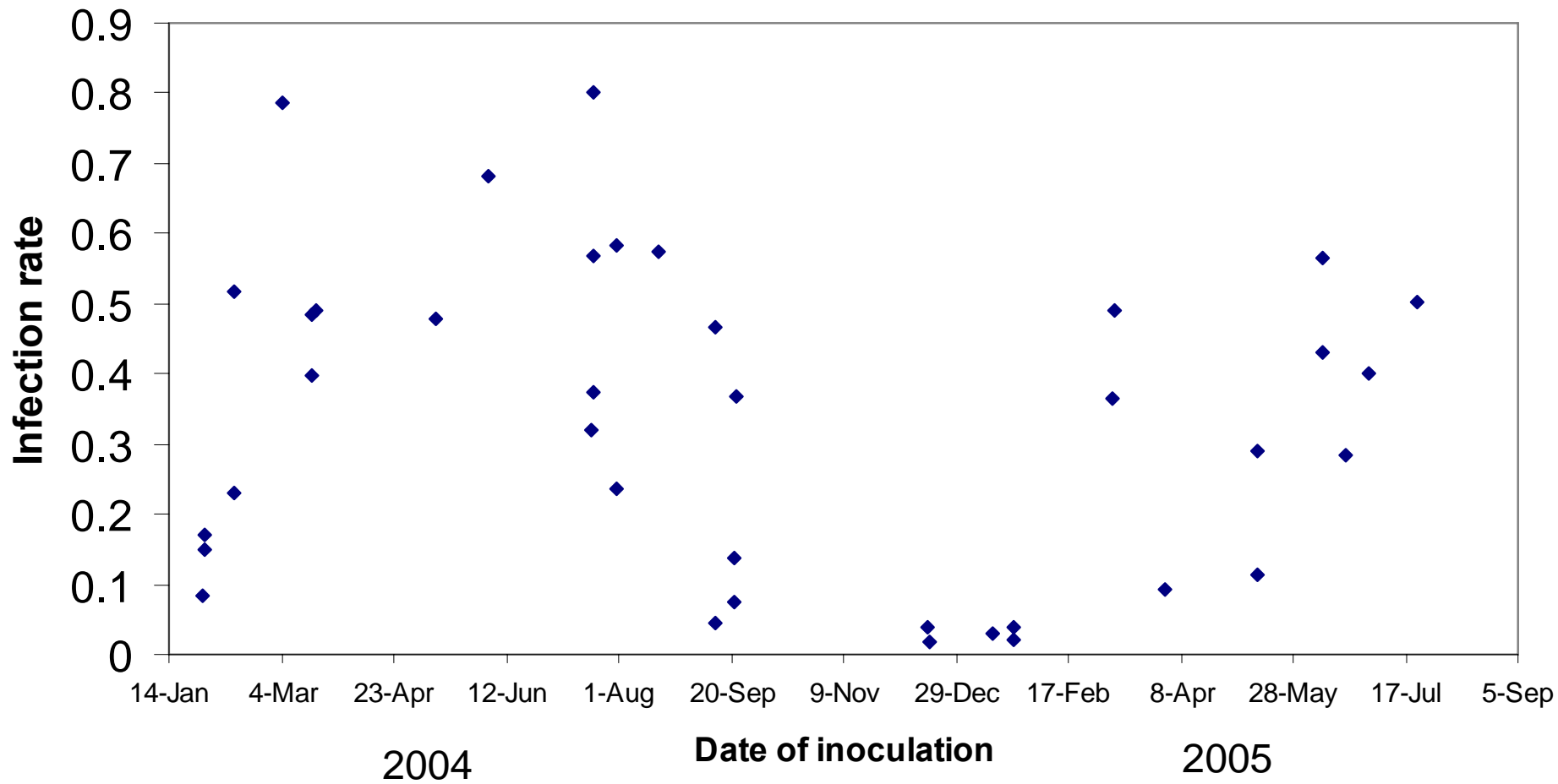


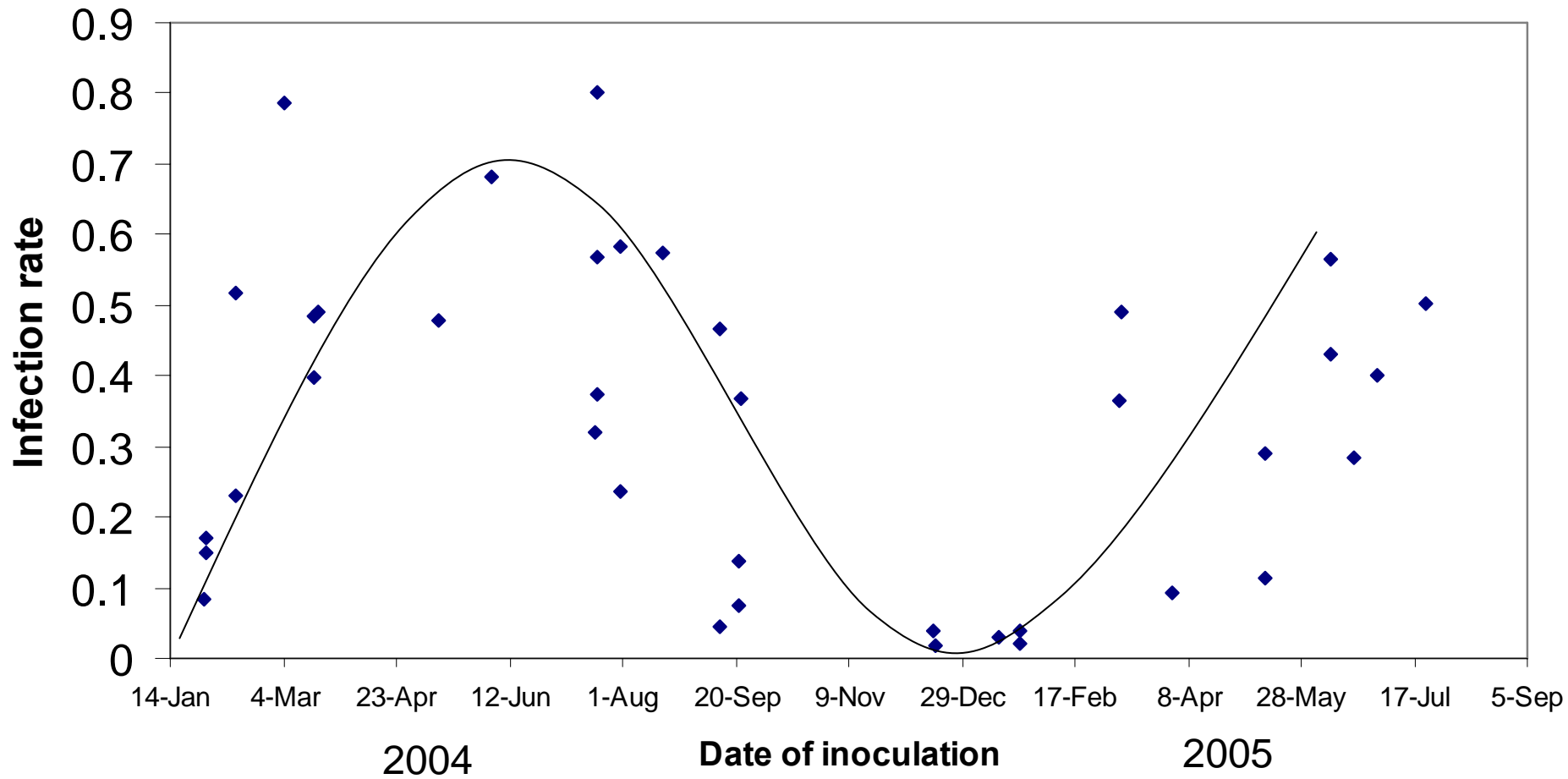
Effect of wound depth on infection frequency



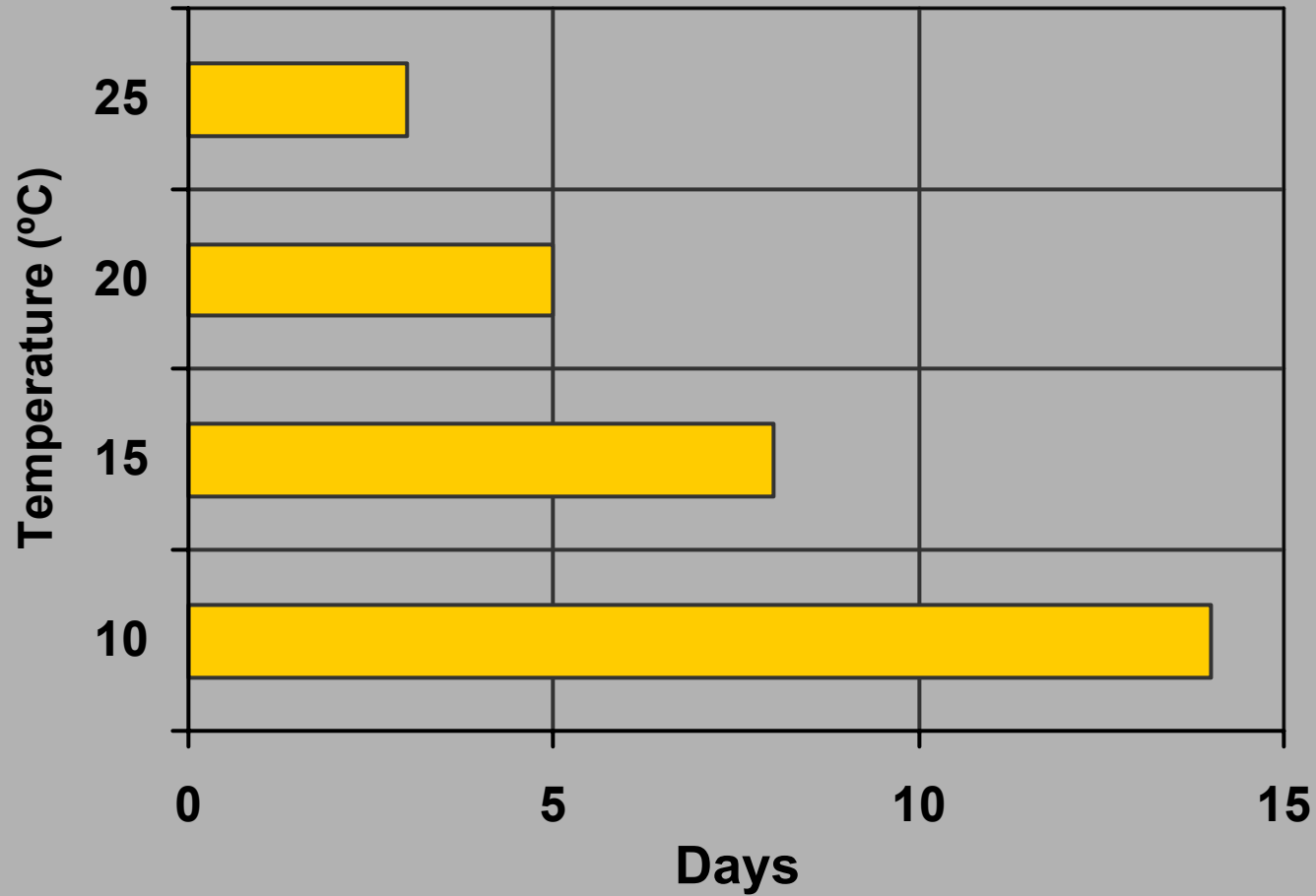
TWIG BEETLES CREATE WOUNDS THAT SERVE AS INFECTION COURTS



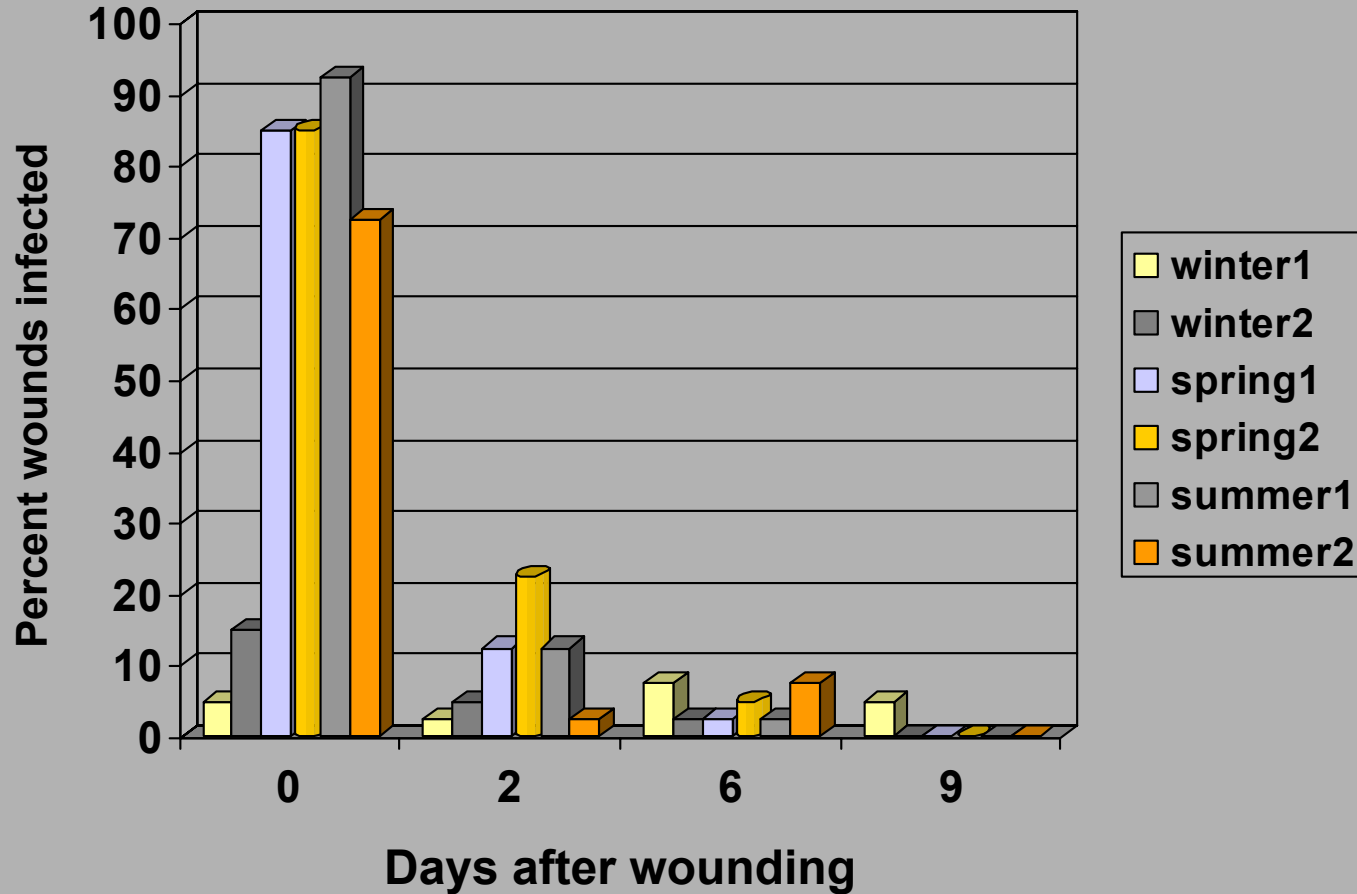




Effect of temperature on germination



Effect of wound age on infection frequency



Infection frequency is limited by temperature

**Infections occur when temperature
is permissive and wounds remain moist**

Cooperating landowners

Caltrans

Presidio Trust in San Francisco

U.C. Berkeley

Crystal Springs Golf Course

Monterey County

Pebble Beach Company

Del Monte Forest Foundation

