University of California
Agriculture and Natural Resources

Kearney Agricultural Research and Extension Center (KARE)

Trunk and Scaffold Canker Diseases of Almond in California

UC CE Cooperative Extension

L.A. Holland, M.T. Nouri, D.A. Doll, R.A. Duncan, G. Braar, M.A. Yaghmour, F.J.A. Niederholzer, E.J. Fichtner, K.S. Pope, B.A. Holtz, G.T. Browne, T.J. Michailides and F.P. Trouillas[1]

[1]*Department of Plant Pathology, University of California, Davis*

Introduction

➢Trunk and scaffold canker diseases (TSCD) of almond cause significant yield and tree losses within orchards, while also reducing orchards life spans.

➢Common symptoms of TSCD include vascular discolorations, wood necrosis, cankers and extensive gumming. Dieback of scaffold branches can occur and eventually the whole tree may die.

➢Up to now, canker diseases have been mostly attributed to *Ceratocystis*, *Phytophthora* and *Botryosphaeria* spp.

➢The main causes of TSCD in California are still unclear and diagnosis as well as management of TSCD remain challenging.

Fig. 1: Cankers developing in the wood of trunks and scaffold branches of almond trees

Objectives of the study:

1. Identify and characterize the main pathogens associated with perennial cankers in almond

2. Improve disease diagnosis

3. Develop sustainable control strategies

Seeing canker diseases in your orchard?

Contact the Fruit & Nut crops Pathology Lab!

Florent Trouillas: flotrouillas@ucanr.edu

Leslie Holland: lholland@ucdavis.edu

Acknowledgments: we thank the Almond Board of California for financial support

Materials and Methods:

➢Statewide survey and comprehensive sampling of almond trees

➢Identification of pathogens associated with TSCD using culture-dependent and molecular methods

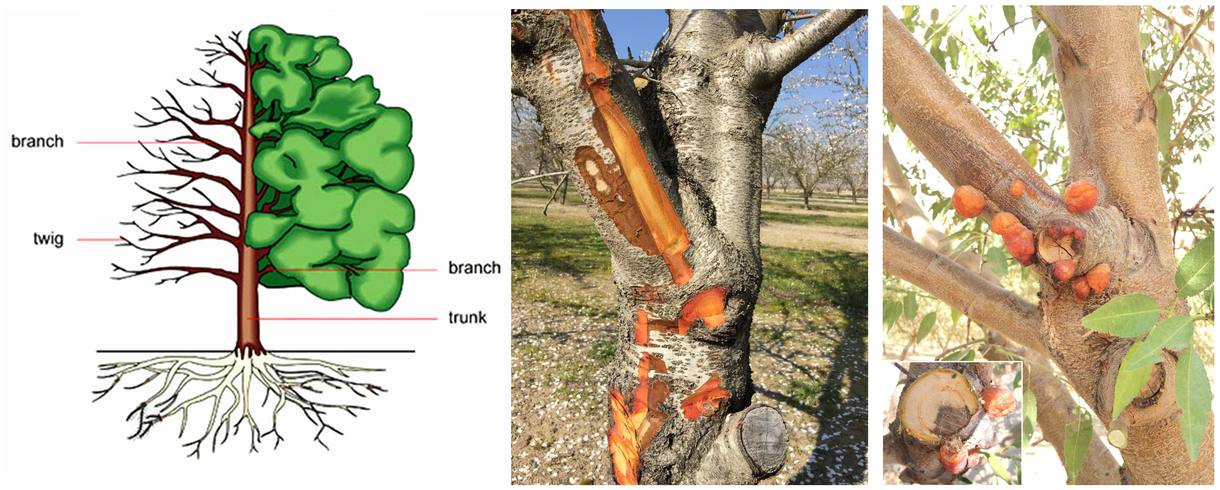

Fig. 2: Tree parts and types of symptoms sampled for this study

Preliminary results (2015)

➢42 orchards visited, 200 cankers collected, 200 fungal isolates being characterized

➢Most fungi were isolated from cankers developing from pruning wounds, inclusions at the tree crotch or shaker injuries

➢Ceratocystis canker is still widespread in almond orchards in California

➢Great diversity of new fungal pathogens associated with almond canker diseases

Fig. 3: Colony on Potato Dextrose Agar of new fungal pathogens isolated from cankers

Next steps…

1. 2016: continue extensive surveys of California almond orchards

2. Test the pathogenicity in almond of the main fungi associated with cankers

3. Investigate the control efficacy of indigenous microbes and diverse fungicides as pruning wound protectants against almond canker pathogens