Biology and Management of Almond Scab and Alternaria Leaf Spot

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PROJECT SUMMARY

Objectives:

- Identify pathogenic species of *Alternaria* using molecular methods.
- Determine if sexual reproduction occurs within orchard populations of *F. carpophilum* using molecular methods.
- For scab management, evaluate the effect of dormant applications on sporulation of infected twig lesions.
- Evaluate new and registered fungicides for their efficacy in disease management.
- Establish baseline sensitivities and monitor for shifts in sensitivity in pathogen populations to different classes of fungicides.
- Improve the Disease Severity Value (DSV) model by using dew point and temperature for forecasting infection periods and timing of fungicide treatments.

Background and Discussion:

Alternaria leaf spot (*Alternaria* spp.) and scab (*Fusicladium carpophilum*) have become serious diseases in many almond growing areas. Severe outbreaks with tree defoliation by early to mid-summer occur in orchards with intensive farming practices where high-density plantings increase dew formation, stagnant air, and drying times as well as in orchards with poor soils and inadequate drainage where trees require frequent and extended irrigations into the summer.

This project continues the multi-year effort to better understand the epidemiology of the diseases, improve disease prediction and timing of control measures, assess the efficacy of new and registered fungicides, and monitor for resistance development.

Studies on the identification of species of *Alternaria* involved are currently being concluded and preliminary data on the population structure of *F. carpophilum* are being summarized.

For scab, dormant applications with chlorothalonil-oil provided a very effective delay in sporulation of twig cankers in the springtime, and this treatment will be an excellent alternative to copper-oil or liquid lime sulfur dormant treatments.

With widespread resistance to QoI (FRAC 11) and MBC (FRAC 1) fungicides and a high level of natural insensitivity against the SDHI (FRAC 7), boscalid, in *F. carpophilum*, and with common resistance against QoIs and SDHIs in *Alternaria* spp., we are developing alternative fungicides. For Alternaria leaf spot, the highly effective polyoxin-D (Ph-D, FRAC 19) and several DMIs (e.g., Quash, Inspire, FRAC 3) were registered through our research. These fungicides also fit well into a scab management program since treatment timings are overlapping for the two diseases when a dormant treatment suppresses sporulation of twig infections until May-June.

For resistance management, we are evaluating additional alternatives. New sub-groups of the SDHIs (penthiopyrad - Fontelis, fluxapyroxad - a component of Merivon, fluopyram - a component of Luna Sensation and Luna Experience) showed high promise in our field trials.

The multi-site mode of action chlorothalonil that is effective against both diseases potentially will have a critical role in preventing the over-use of SDHIs and DMIs, thus, reducing the potential for selecting resistant pathogen populations. The proposed label changes (higher rate and a 60 day PHI) will allow for a shortening in the preharvest interval on almond.

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For More Details, Visit

- Poster location 56, Exhibit Hall A & B during conference; or on the web (after January 2013) at www.almondboard.com/researchreports
- 2011.2012 Annual Report CD (11.PATH3.Adaskaveg); or on the web (after January 2013) at www.almondboard.com/researchreports