

MyIPM, a New Smartphone App for Strawberry and Peach Disease Management

Guido Schnabel, Mengjun Hu, Gregory Edison, and Roy Pargas
Clemson University, Department of Agricultural and Environmental Sciences and Department of
Computer Sciences, Clemson, SC

G. Schnabel, schnabe@clemson.edu; cell 864 654 7131

Abstract

We developed a new smartphone application, MyIPM, to promote Integrated Disease Management for sustained peach and strawberry production in the southern United States. *The app is available in the Google Play Store and Apple Store.* It features about a dozen of the most important diseases and disorders of the two fruit crops. For each disease/disorder there are pictures of signs and symptoms, descriptions of the causal agent, and a 2-min audio from the regional specialist. The app features chemical and biological control options, including a list of registered active ingredients for each disease that are sortable by FRAC codes and southeastern spray guide-published efficacy. The app also features field EIQ values as published by the Cornell IPM Program. The active ingredients are linked to registered trade names. MyIPM also features some audio recordings from regional specialists on peach and strawberry IPM issues. Our vision is that this app provides a valuable tool for growers and specialists alike that supplements current spray guides. The unique display of active ingredients, color-coded by chemical classes, provides a useful tool to promote resistance management. MyIPM is fed by an external database that can be updated through an authoring tool and is free of charge. It is expandable to more crops and could, with minor programming modifications, also be useful for entomologists. MyIPM provides Integrated Pest Management (IPM) information to conventional and organic producers of strawberries and peaches in the Southeastern United States. The target audience includes commercial growers, farm advisors, and specialists, but homeowners will also find useful information.

Specific Features

The welcome screen lets the user choose either strawberries or peaches. On the main page he may slide through pictures of diseases from left to right or right to left or pick a disease from the dropdown menu. For strawberries the app features Angular Leaf Spot, Anthracnose Crown Rot, Anthracnose Fruit Rot, Botrytis Crown Rot, Charcoal Rot, Gray Mold, Leaf Blight/Spots/Scorch, Leather Rot, Phytophthora Crown Rot, Powdery Mildew, Red Stele, and Verticillium Wilt. For peaches the app features Alternaria Fruit Rot, Anthracnose Fruit Rot, Armillaria Root Rot, Bacterial Spot, Blossom Blight, Brown Rot, Constriction Canker, Gummosis, Leaf Curl, Peach Scab, Peach Tree Short Life, Rhizopus/Gilbertella Rot, and Rusty Spot. Tapping 'Summary/Gallery/More' opens the Summary page, which provides an overview and a short two to four minute audio from a regional expert. The GALLERY features up to six pictures of disease signs, disease symptoms, schematics, or photographs of management options. The user can zoom in on each picture by tapping and spreading with two fingers. In the MORE section, the user finds information about the disease and its causal organism (including Symptoms and Signs and Disease Cycle), Chemical Control information, Fungicide Resistance in the eastern U.S., and Non-Chemical Control information (including Biological Control Options, Cultural

Control Options, and Resistant Varieties).

Back on the main page, underneath 'Summary/Gallery/More are links to Active Ingredients and Trade Names for the featured disease. For example, on the page displaying Strawberry/Angular Leaf Spot, when tapping Active Ingredients the user can choose between Conventional (Acibenzolar-S-Methyl) and Organic (Bacillus amyloliquefaciens, various coppers, hydrogen dioxide, and neem oil) materials. Active ingredients are color-coded according to FRAC Code. Efficacy values from the regional spray guide as well as Field EIQ (Toxicity values) Cornell IPM Program are also listed and can be obtained by sliding the right half of the table. FRAC Codes, Efficacy and Toxicity values are sortable. When tapping an active ingredient in the left column, a new table appears listing the registered Trade Names that contain that active ingredient. Back on the main page, tapping Trade Names displays all available products for this specific disease for conventional and organic production separately. Also featured in the sliding table are the Active Ingredient, Rate/Acre, PHI, REI, and Toxicity values. Again, all components in the sliding table are sortable. In order to quickly display Active Ingredients and Trade Names for a specific disease, the user can choose a different disease from the dropdown menu on the top right. For example, starting from strawberry/Angular Leaf Spot/Active Ingredient, the user can select on the drop down menu the next disease (Anthracnose Crown Rot). Different Active Ingredients are displayed that are registered for Anthracnose Crown Rot management (displayed in active ingredient column are: azoxystrobin in green, boscalid;pyraclostrobin in red and green, captan in black, and more). Note: For some diseases (Charcoal Rot or Verticillium Wilt) no active ingredients are registered and only the empty table is displayed. Back on the main page, under General/Fungicide Resistance are three choices: FAQs, Guidelines for collecting and mailing your samples, and Situation in the Eastern U.S. Under FAQ are questions and corresponding answers; 'Guidelines for collecting...' lists text and pictures; and 'Situation in the ...' lists one paragraph of text. Back on the main page, About MyIPM features more information about who made the app, the sources for Active Ingredient and Trade Name tables and links to the sources. Back on the main page, the Feedback button allows users to contact the main author of the app. Upon tapping this link, an email message in the outbox is prepared.

Future Developments

Work is in progress to add blueberry diseases to MyIPM. We are also working on a pest version of MyIPM (MyIPMpests) to feature first blueberry pests and later peach and strawberry pests.

