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Southeastern Peanut Research Initiative 2017 FINAL REPORT

UF Project Number: P0047365

Project Title: Implementing leaf spot decision support tools on the PeanutFARM website.

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1. Abstract

PeanutFARM is a web-based resource that provides a set of electronic tools for growers to manage their everyday peanut farm operations. The addition of various peanut disease DSS to the PeanutFARM website can increase the utility of this resource while providing growers with access to multiple DSS. The goal of this research was to add current leaf spot models (AUPnut and Peanut Leafspot Advisories in North Carolina) to the PeanutFARM website for an advisory system that indicates when high risk disease development periods are present. Researchers were able to develop logic models for the implementation of these tools on the PeanutFaRM website with initial programing being completed by FieldX. These tools will be ready for beta-testing in February of 2019 on the PeanutFarm website.

2. Introduction

Decision support systems (DSS) for plant disease are continually being developed by researchers and industry personnel from around the world. Often the availability of these DSS are limited thus minimizing their impacts on stakeholders. This project will focus on adding current leaf spot spray DSS to the PeanutFARM website. We hypothesize that the addition of leaf spot DSS to the PeanutFARM website will assist growers with the spray management decisions, and lower disease impacts through optimum fungicide timing. The objectives of this study are to 1.) Implement leaf spot DSS using the PeanutFARM website as the interface. The long term goal of this research is to continually add more disease resources to the PeanutFARM website that will assist growers in making many of their peanut management decisions.

3. Methods

Logic Models for Disease Prediction

Research papers published on AU-Pnut and NC Leaf Spot Advisory Model. These publications describe the models and their critical values for data needed to be collected on the PeanutFARM website.

Programing and Implementation

All programing for the models and web tool development was completed by FieldX (<http://fieldx.com/>), under the supervision of Dr. Diane Rowland and David Krueger. Programing of the models was completed in 2018, but further programing will be needed to create a valuable user interface for the PeanutFARM website.

4. Results

The DSS tools should be on the website in 2019. The tools were based on the following logic models.

AU-Pnut leaf spot advisory (Jacobi et al., 1995)

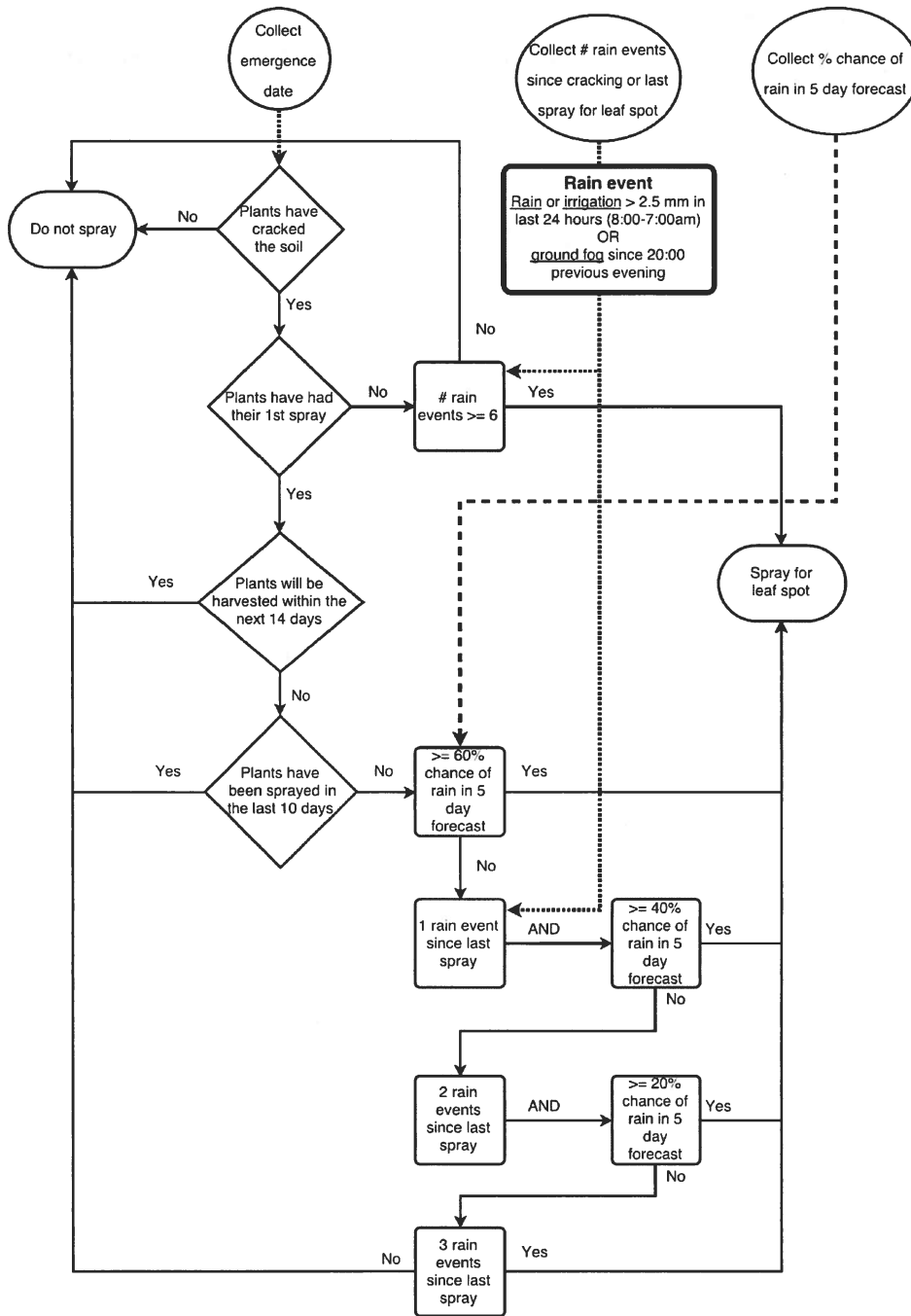


Figure 1: AU-Pnut logic model for the leaf spot advisory model published by Jacobi et al.

Virginia/North Carolina peanut leaf spot advisory
(Cu & Phipps, 1993; Shew - NCSU online)

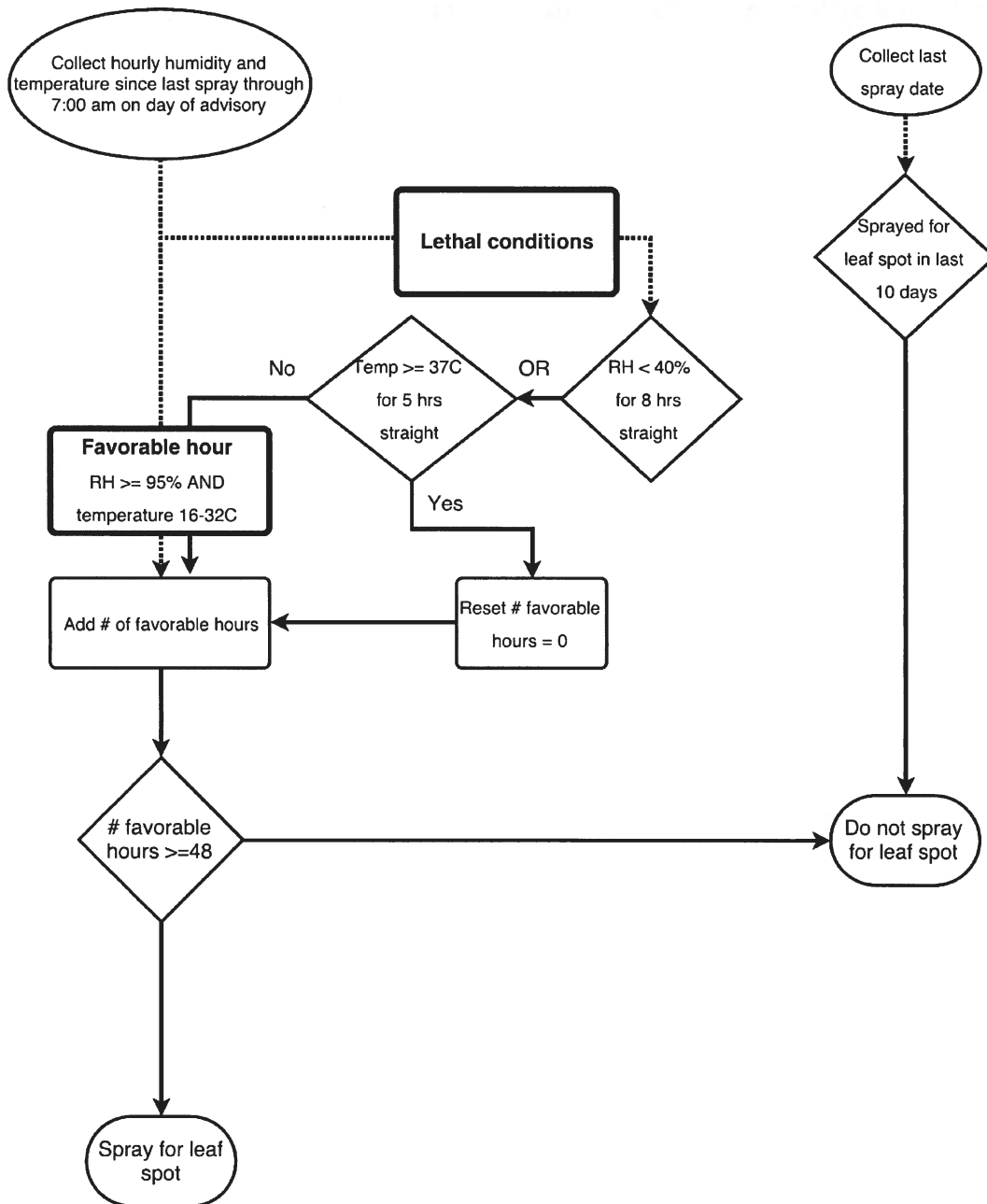


Figure 2: Peanut leaf spot advisory logic model from North Carolina State based on research published by Cu and Phipps and the Dr. Barbara Shew’s web resource at North Carolina State (<https://peanut.ces.ncsu.edu/2015/07/using-the-leaf-spot-advisory/>).

5. Summary

The logic models provide the background for the coding needed to implement these tools on the PeanutFARM website. The goal was not to recreate a leaf spot advisory system but rather offer an ensemble of models for the industry to use in one location with crop develop. Ultimately, these tools will be released in 2019 for beta-testing with the hopes of determining how the models fit into peanut production in Florida and the Southeast. Creating one resource for these models is key to reducing the confusion already related to the over supply of data and tools for agronomic crop management.