

## Ohio Vegetable and Small Fruit Research and Development Program

### Final Report

2017

**Project Title:** Emerging Soilborne Diseases in Plasticulture Strawberry Production

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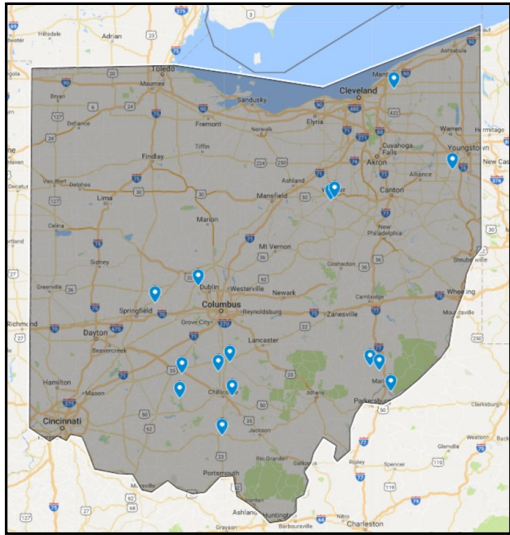
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**Why was this project funded?** This project was funded to identify emerging soilborne diseases affecting Ohio strawberries in a plasticulture system. The adaption of an annual plasticulture-based production system and new everbearing strawberry varieties have enabled strawberry farmers in the Midwest to produce and market throughout the summer and into the late fall. In Ohio, strawberry farmers are modifying the traditional annual plasticulture-based production system that is used in the Southeastern and Western U.S. in order to collect fruit from the crop over two or even three seasons, in order to reduce production costs and reap the yield benefits of the system. In the past year, Ohio growers have reported a steady decline in fall plant growth due to plant dieback, collapse, and/or wilting, especially during the second crop cycle (i.e. year two of an annual crop cycle).

**Project Outline:** Ohio strawberry producers were contacted for participation in the study. Once scheduled, each farm was visited from 11 different counties from the North Western, Central, South Eastern and South Western regions of Ohio (Figure 1). The visits included in-depth discussions of the practices used on each farm with the growers. The growers were very willing to share that information and aid in our understanding of the current production practices for strawberries in Ohio. Of the 16 growers that participated, four used matted row strawberry production in some capacity. The remaining growers only used plasticulture. Plants with wilt symptoms were collected from each location and assessed for disease by making longitudinal cuts through the crown to look for crown discoloration (Figure 2), isolations (Figure 3) and fungal identification based on colony and spore morphology. In addition, bare root plants from one location were collected and assessed for crown rot.

**Take-Home Messages:** Strawberry plasticulture production has eliminated many production hurdles for Ohio strawberry growers but diseases are still problematic. At each of the 16 farms sampled in this study wilted plants indicative of disease were observed and many of the growers indicated that black root rot was the cause of the wilt. The following fungi were putatively identified *Rhizoctonia*, *Fusarium*, and *Colletotrichum* based on colony and spore morphology. In some locations, all three fungi were isolated from a single plant while in other locations only one fungus was isolated from a plant. Several fungi could not be putatively identified based solely on colony and/or spore morphology. All fungi isolated

from this study that are suspected to be the cause of crown and root rot will be identified using DNA sequencing. The study will also be repeated in the spring to determine if disease profiles differ significantly in the spring. A complete summary of this study will be reported in a 2018 issue of Ohio Fruit News.



**Figure 1: Locations of strawberry farms surveyed for crown and root diseases in fall 2017.**



**Figure 2: Examples of strawberry crowns with varying degrees of crown rot. Fungal isolations from all plants with crown rot were conducted.**



**Figure 3. Examples of fungi isolated from diseased strawberry crowns. When possible the fungi were identified based on colony and spore morphology.**

