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Optimizing Greenhouse Corn Production: Will Using Calcined Clay Reduce Fungus Gnat Infestation?

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**Purdue Methods:
Optimizing
Greenhouse
Corn
Production**

Will using calcined clay reduce fungus gnat infestation?

Fungus gnats (families Mycetophilidae and Sciaridae) are common greenhouse pests whose larvae can feed on plant roots and leaves that touch the soil surface. They are not considered a problem for corn, but their presence can lead to spread to other susceptible crops. We've observed fewer fungus gnats adults in crops using calcined clay and wanted to quantify it. In Experiment 13 (see Materials and Methods report), we placed potato slices on the soil surface of five pots of four root media to trap larvae. Trapping adults with sticky cards is not as effective since they can fly from other locations. Results are listed in Table 1.

We compared two calcined clay products against two standard root media used by greenhouse facilities, both with field soil incorporated to improve nutrient content. For simplicity, in this report we'll refer to the larger-sized granules by the trade name Turface and the smaller size granules by Profile. This is not meant as an endorsement of the products, as other companies make similar products that we did not test.

Both calcined clay products had fewer fungus gnats than the standard mixes. We also found springtails (order Collembola), mostly prevalent in Turface. The Extension Entomologist who identified the springtails told us they were not harmful to plants. Interestingly, the standard mixes had several larvae of Rove Beetle (family Staphylinidae). This species is considered a beneficial insect. It was thought these must have been in the field soil dug for the standard mixes. The soil may not have been heat-treated, because weeds were prevalent over the course of the experiment. Perhaps this is a benefit of mixes that include field soil that has not been documented.



Transparent fungus gnat larvae on potato wedge, lower left quadrant.

Table 1. Summary of attributes of root media tested.

Root Medium*	Fungus Gnat larvae	Shore Fly larvae	Springtails	Rove Beetle larvae
1:1 field soil / soilless mix	22	0	7	6
1:9 field soil / soilless mix	7	0	0	4
Turface	0	0	42	0
Profile	0	7	0	4

*Five single pot replicates, each with one potato slice.