



***Tired of pests and pathogens?
Wary of using chemicals?***

Introducing...

ThermoCleanze™

By Patrick Friesen, PhD



Introducing ThermoCleanze™: a 55°C heat clean option to eliminate most plant pests and pathogens

Listening to our customers we realized many plant growth facilities struggle with pests and pathogens. Our engineering team then asked: would 55°C be hot enough to effectively eliminate most plant pests and pathogens? After reviewing the literature, the answer is yes! 55°C effectively kills most plant pests and pathogens (see chart and references below). BioChambers patented this heat clean system, named it ThermoCleanze™, and released it commercially in July 2025. ThermoCleanze™ is available as an option on all chambers and rooms except our Low Temperature series.

How does it work?

The user ensures no person is inside the chamber or room, locks the door (walk-in rooms), and programs the number of hours ThermoCleanze™ will run (up to 120 hours or 5 days). Once ThermoCleanze™ is initiated, the lights will shut off, the fresh air and exhaust dampers will close, and the temperature will rise to 55°C. The time required to reach 55°C will vary depending on the chamber or room model and could take several hours. ThermoCleanze™ can also be used to heat clean soil before planting seeds. For soil cleaning it is recommended to insert thermocouples or thermistors into the center of the soil mass to ensure it reaches 55°C for the desired length of time. In an empty chamber or room, a 12hour or 24hour run time will be sufficient to eliminate most common plant pests and pathogens (Table 1).

How effective is ThermoCleanze™ (55°C) at eliminating most plant pests and pathogens?

ThermoCleanze™ is most effective at eliminating pests and fungal and oomycete pathogens. Some common plant bacterial and viral pathogens are also eliminated at 55°C. Table 1 shows which common plant pests and pathogens would be eliminated by a 12 hour and 120 hour ThermoCleanze™ run time, and the supporting references.

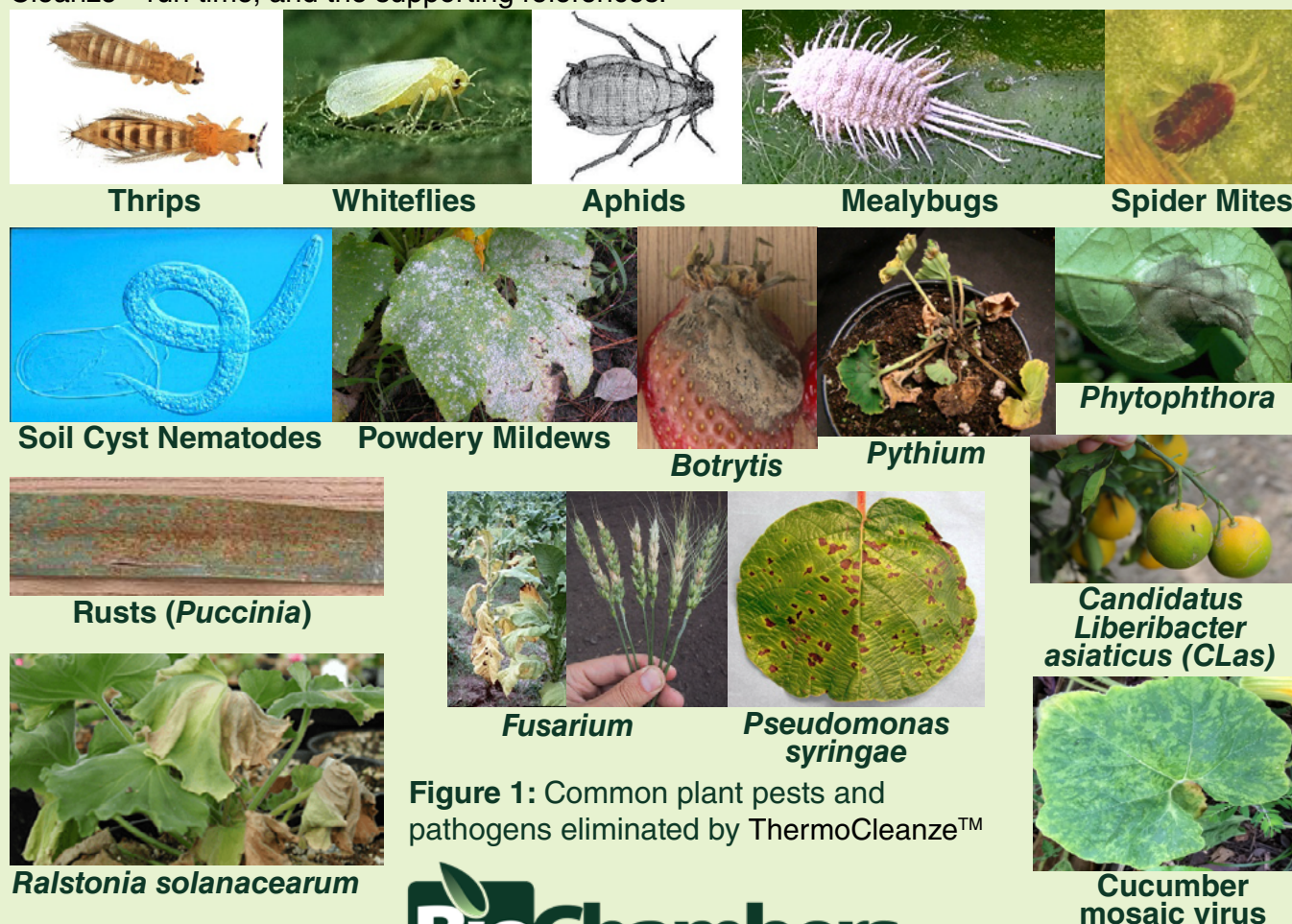


Table 1: Effectivity of ThermoCleanze™ to eliminate most common plant pests and pathogens

	12 hour ThermoCleanze™ runtime will eliminate	120 hour ThermoCleanze™ runtime will eliminate
<i>Pests</i>		
<u>Thrips</u>	Yes ¹	Yes ¹
<u>Whiteflies</u>	Yes ²	Yes ²
<u>Aphids</u>	Yes ^{3,4}	Yes ^{3,4}
<u>Mealybugs</u>	Yes ^{5,6}	Yes ^{5,6}
<u>Spider Mites</u>	Probably ⁷	Yes ⁷
<u>Soil Cyst Nematodes</u>	Yes ⁸	Yes ⁸
<i>Fungal/Oomycete Pathogens</i>		
<u>Powdery Mildews</u>	Yes ^{9,10}	Yes ^{9,10}
<u>Botrytis</u>	Yes ^{11,12}	Yes ^{11,12}
<u>Pythium</u>	Yes ¹³	Yes ¹³
<u>Phytophthora</u>	Yes ¹³	Yes ¹³
<u>Rusts (<i>Puccinia</i>)</u>	Very Likely ¹⁴	Very Likely ¹⁴
<u>Fusarium</u>	No ¹⁵	Yes ¹⁵
<i>Bacterial/Viral Pathogens</i>		
<u><i>Pseudomonas syringae</i></u>	Yes ¹⁶	Yes ¹⁶
<u><i>Ralstonia solanacearum</i></u>	Yes ¹⁷	Yes ¹⁷
<u><i>Candidatus Liberibacter asiaticus</i> (CLas)</u>	Yes ^{18,19*}	Yes ^{18,19*}
<u>Cucumber mosaic virus</u>	Yes ²⁰	Yes ²⁰
<u>Tobamoviruses (TMV, ToBRFV, PMMoV)</u>	No ^{21,22}	Probably not ^{21,22}

*Heat treatments conducted on infected living plants

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