

Effects of vacuum and controlled atmospheres on insects

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A vacuum and controlled atmosphere system was constructed in 2002 and preliminary studies were conducted to determine effects of vacuum and controlled atmospheres on survival of aphids and leafminers. Vacuum and controlled atmospheres with low levels of CO₂ were tested against lettuce aphid, potato aphid, leafminer larvae, and leafminer pupae at 0, 5, and 10°C for different lengths of time. Certain treatments resulted in 100% mortality of both lettuce aphid and potato aphid. But no complete mortality for either larvae or pupae of leafminers was achieved. Treatments at higher temperatures were more effective against insects. Effects on lettuce quality were also evaluated. The insecticidal treatments used in the study did not cause negative impact on visual quality of iceberg lettuce.