

Alfalfa Leafcutter Bee Incubation Calendar - 2016

(Modified from the original *SAF FarmFact* publication)

D.W. Goerzen, Research Scientist

Alfalfa leafcutter bee cells are placed into incubation trays and the incubator temperature is set at 30°C. Count "Day 1" of incubation as the first full day at which the bee cells are at 30°C. This calendar of incubation assumes cold storage at 5°C prior to incubation and incubation at 30°C, with use of dichlorvos resin strips for chalcid parasite control.

- Day 1 Alfalfa leafcutter bee cells are at 30°C with bees in the prepupal stage. UV light - water traps are in place, and a thermostatically-controlled incubator alarm system is operational.
- Day 3 Chalcid parasites undergo their final moult into the pupal stage.
- Day 7 Place dichlorvos resin strips in the incubator at the recommended rate (3/4 strip per 1000 cubic feet). If the incubator is only partially full of bee cells, consider using a lower rate of dichlorvos.
- Day 8 Leafcutter bees begin to undergo their final moult into the pupal stage. At this stage they are very sensitive to temperature fluctuations so maintain an even temperature - do not cool at this time.
- Day 8 - 9 Chalcid parasites begin to emerge. While many parasites will die in the trays, some parasites will make it to the UV light - water traps.
- Day 9 - 12 Chalcid parasites continue to emerge.
- Day 10 Alfalfa leafcutter bee pupae begin to show some eye colour (the pink-eyed stage).
- Day 12 Alfalfa leafcutter bee pupae continue to darken in colour, in the eyes and over the back.
- Day 13 Remove dichlorvos resin strips from the incubator. **Air the incubator thoroughly for 24 - 48 hours**, using an exhaust fan and circulating fans. Maintain the 30°C temperature if possible.
- Day 14 - 15 Leafcutter bee pupae continue to darken in colour. If cooling occurred during the airing period following removal of dichlorvos, bring the temperature back to 30°C for continued incubation.
- Day 14 - 15 Native leafcutter bees emerge. It is normal for these wild bees to emerge several days earlier than the alfalfa leafcutter bees.
- Day 14 - 22 **At any time during this period, if incubation must be slowed due to weather or delayed alfalfa bloom, bee cell temperature can be lowered to 10 - 15°C for up to two weeks to stop bee development. Once temperature is increased, bee development resumes until emergence is complete. Note: Bee cell temperature within the incubation trays must be 10 - 15°C.**
- Day 16 The most advanced alfalfa leafcutter bee pupae (primarily male bees) are completely dark in colour, while the more slowly developing female bee pupae continue to darken.
- Day 18 - 19 Male alfalfa leafcutter bees begin to emerge at this time. **Remember that the bees are very susceptible to high temperatures.** Make sure that your incubator alarm system is working.
- Day 21 - 22 Female alfalfa leafcutter bees begin to emerge. Male bee emergence peaks. Second generation chalcid parasites begin to emerge.
- Day 23 - 24 Female alfalfa leafcutter bee emergence peaks.
- Day 23 - 24 Incubation trays are taken to the field for adult bee release once female bees are 75% emerged.
- Day 28 Alfalfa leafcutter bee emergence is virtually complete at 30°C.