Incubator for queen cells

I addressed the topic incubator some time ago already and suggested various models to build yourself. Since I've been asked several times, I would like to revisit the topic.

You can build high quality incubators yourself with very little effort. A standard size plastic frame works great as the housing. The electronic controls with a deviation of only +-0.1 degrees Celsius can be purchased inexpensively as a preassembled spare part. This also applies to the heater, although electric heating pads will serve the purpose just as well (The buying sources are listed below).

A fan is not required with horizontal configuration and the heating surface placed at the bottom, and does not provide any advantages. If necessary, such equipment can quickly be assembled and does not take up space during the remainder of the time.

Since pictures illustrate better than descriptions, the individual steps will be displayed in the following images and suitable notes added:



The electronic temperature control with temperature sensor is mounted on the cover (3 mm backer board). The corners were cut and allow for air exchange.



The bottom of the cover is enforced with framing brackets. A wooden piece protects the temperature sensor from potential damage. The frames are attached using a hot glue gun. Additional nails are added from the reverse.



Small slats are glued to the sides of the frame to better support the cover. Mount using a hot glue gun. In both sides of the lower area drill two pencil size vent holes through the wall.



For a heating floor with an output of 60-80 Watt, also use the 3mm thick backer board. Spacer blocks are glued to the board. These are also nailed on from the reverse. The heating cable is laid between the wooden blocks. The cable is secured with solvent-free tile adhesive, which can also be done using the hot glue gun.



If the temperature in the covered heating floor rises above 80 degrees under constant current – the regulator is not yet connected – a thermostatic switch is interposed for safety purposes. This will interrupt the current supply e.g. depending on the type at a temperature of 60-70 degrees.

You may also use a 30 x 40 cm heating pad. It is inexpensive and less work.



The pegboard is then glued to the heating floor. Using the glue gun on multiple spots will suffice. Styrofoam is added under the bottom board for insulation. In this case a double layer of common aluminium coated cladding for radiators is used.

The queen cells or schooling cage are not directly placed on the hot plate. Frame slats also serve as feet under the tray



A completed incubator frame with optimal feature



Heating pad AEG Model HK 5510

The temperature is measured at the breeding slat or cage level using a thermometer inserted from outside. I use a laboratory thermometer with a 0-50 degree range. The scale lines for 1 degree must be easy to read and have a distance of about 1.5 mm.

Adding a water filled honey jar is sufficient for proper humidity levels.

During summer, a humidity of 35 – 50% is measured in bee colonies. A higher humidity level will not do harm. Higher humidity levels in the incubator of 70-85% a few days prior to eclosion are beneficial to queen cells as well as drones. In addition, feed dough will not dry out as quickly.

The optimal temperature for egg and maggot development is in the range of 32-35 degrees C. The incubator is set to 33.4 - 34 degrees. Since the desired temperature will take some time to level off and will still increase a bit in the beginning, the incubator should be started up the day before and regulated. The incubator should be set up in a location where no great fluctuations in daytime temperatures will occur.

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HEATING PAD, AEG Model HK 5510, 100 Watt, 30 x 40 cm Amazon: Order-No: 303-5141148-3436365

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