E1-15: Behaviour of Sri Lankan honeybees in simulated fair weather and thunderstorm electric field conditions

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Two commercially available wooden bee boxes (0.3 x 0.3 x 0.2 m each) with beehives, were modified by fixing each box with 2 iron meshes of size 0.3 x 0.2 m at the opposite vertical sides. By applying a known voltage across the 2 iron meshes, the bees inside can be subjected to an external electric field.

The activity of honeybees, denoted by the number of bees travelling through the gate of a bee box for a time period of 30 minutes, was observed under different electric field conditions. Results indicate that bees are sensitive to electric fields. Under normal fair weather conditions (E = 10 V/m under a tree), the observed activity was 496. When the honey bees were screened electrically by keeping the beehive inside a Faraday cage (E = O V/m), the activity reduced to 337 and it increased up to 765 for an electric field of 400 V/m.

The behaviour of bees in high electric fields was studied by subjecting the bees to an electric field of 1,500 V/m. The honeybees, in such high electric fields similar to those under thunderstorms, became aggressive, stinging and they produced no new brood.