Figure S1

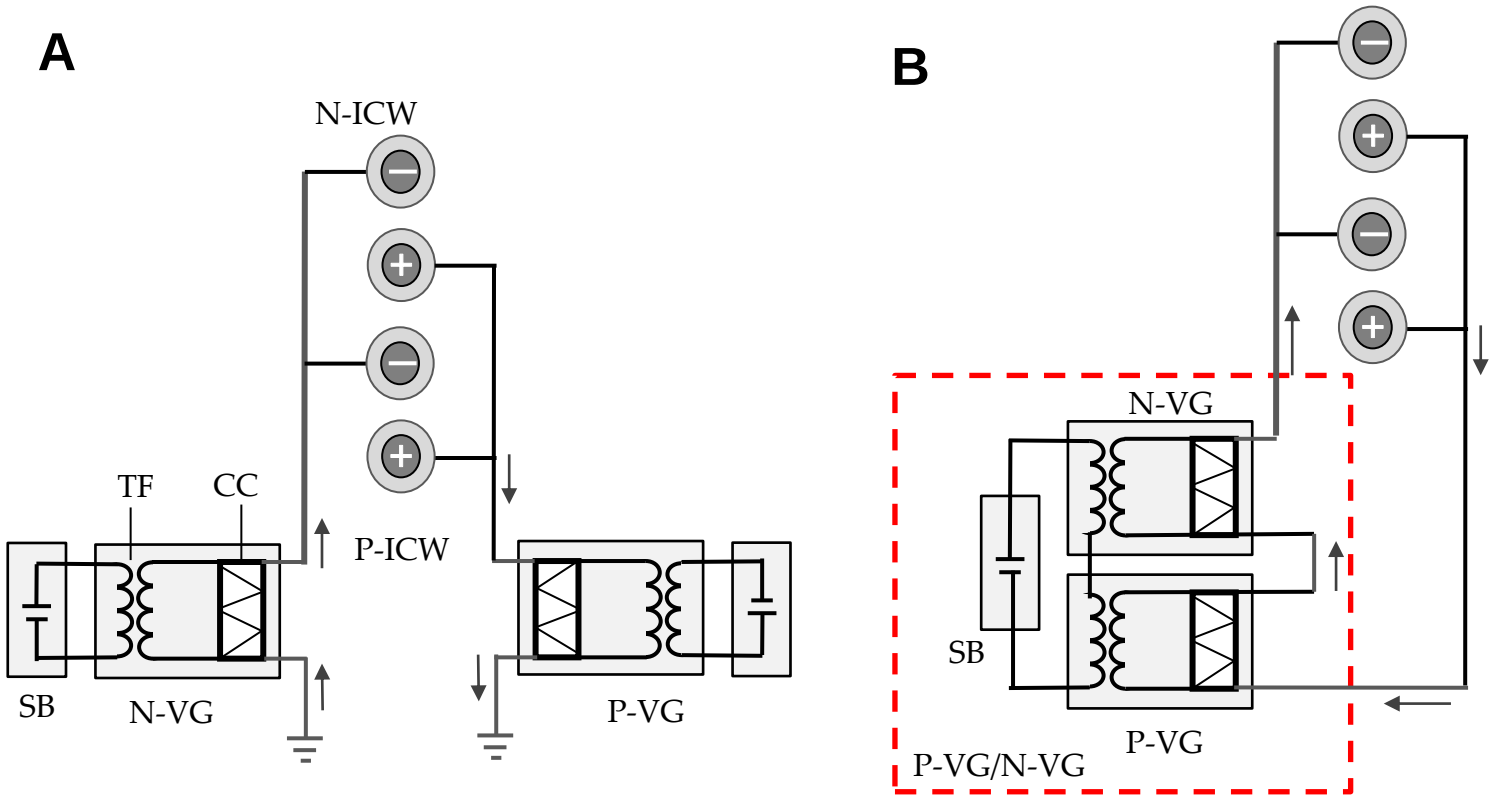

Figure S1. Schematic representations of the grounded (A) and non-grounded (B) circuits integrated into the double-charged dipolar electric field screen (DD-EFS). The arrow indicates the direction of movement of negative electricity (free electrons). (A) The grounded circuit used in the stationary DD-EFS. Here, a negative voltage generator (N-VG) collected negative charge from ground via a voltage enhanced by a transformer (TF) and Cockcroft circuit (CC) and supplied the charge to the insulated conductor wires (ICWs) that then became negatively charged (N-ICWs). In contrast, a positive voltage generator (P-VG) pushed free electrons from the linked ICWs to ground to generate positively charged ICWs (P-ICWs). An electric field formed between these oppositely charged ICWs. Both voltage generators were operated by a storage battery (SB). (B) In the non-grounded circuit, free electrons from the conductor are supplied directly to another conductor using the voltages produced by two voltage generators in a single box (P-VG/N-VG). In such a circuit, the DD-EFS does not require a ground line and is therefore used by a portable or mobile DD-EFS.

Figure S2

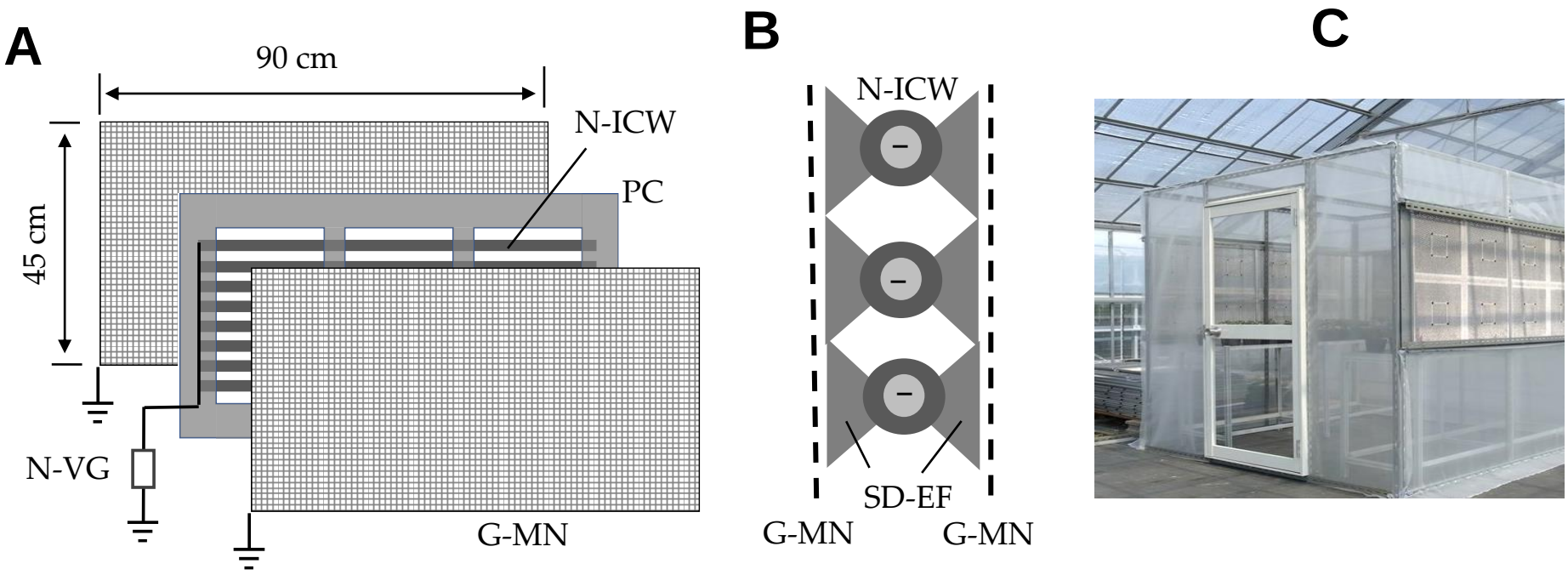

Figure S2. (A) Schematic of a single-charged dipolar electric field screen (SD-EFS) consisting of a layer of iron insulated conductor wires (ICWs) with grounded metal nets (G-MNs) on each side of the layer. The N-ICWs were placed in a parallel arrangement (5 mm-intervals) using a polypropylene cardboard (PC) holder and linked to each other and a negative voltage generator (N-VG). (B) A single-charged dipolar electric field (SD-EF) formed in the space between the negatively charged ICWs (N-ICWs) and G-MNs (cross-sectional view). The N-VG collected negative charge from ground and supplied this to the ICWs. Negative charge accumulated on the surfaces of the conductor wires and dielectrically polarized the insulating cover (the soft polyvinyl chloride tube) (negatively on the outer surface and positively on the inner surface). Finally, the negative surface charge on the ICW pushed negative electricity (free electrons) out of the G-MN to ground; the G-MN became positively charged via the electrostatic induction. An EF formed in the space between the opposite charges (the N-ICWs and positively polarized G-MNs). (C) A cabinet in which SD-EFSs served as lateral windows. The cabinet was placed inside a greenhouse.

Figure S3

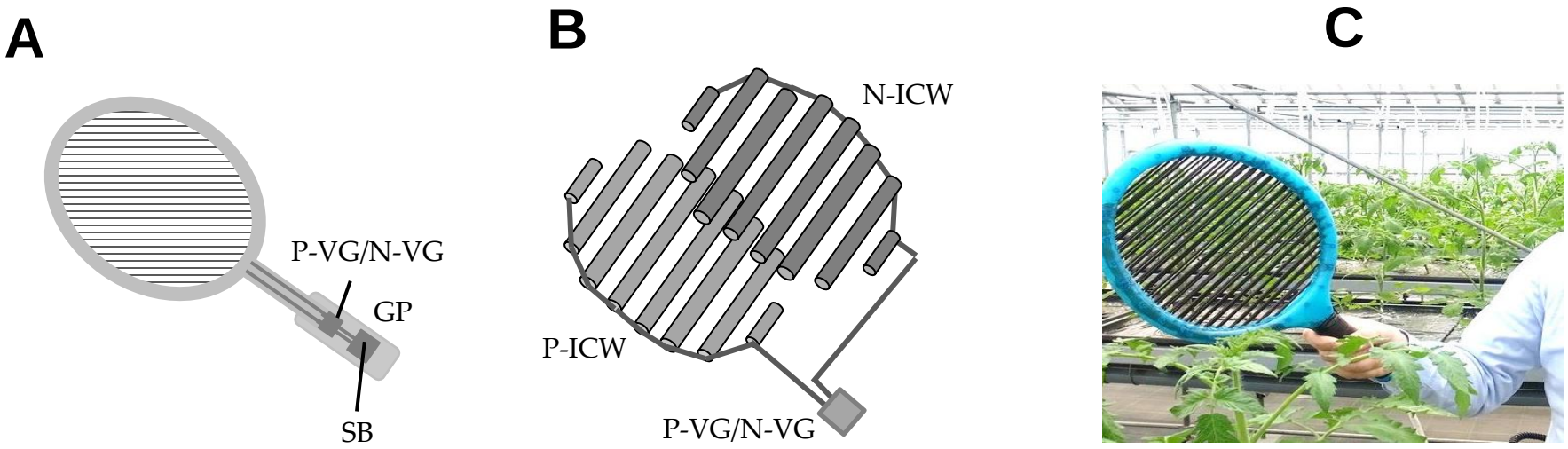

Figure S3. (A) Schematic of the racket-shaped electrostatic flying insect catcher (EFIC). A box containing the positive and negative voltage generators (P-VG/N-VG) and a storage battery (SB) were placed inside the hand grip (GP). (B) Two layers of insulated conductor wires (ICWs) oppositely charged by the two voltage generators. The ICWs of each layer were arranged in parallel at 5-mm intervals and connected to each other, and to the negative or positive voltage generator. The two ICW layers were arranged in parallel with 2-mm spacing between the layers, and the positions of the ICWs of each layer were offset among the layers. The ICWs of both layers were oppositely charged with an equal voltage (1 kV). An electric field formed between the negatively charged ICW (N-ICWs) and positively charged ICWs (P-ICWs). The generators used 12-V storage batteries. (C) The EFIC is portable and easy to operate in a greenhouse. Whiteflies colonizing tomato plants were forced to fly up by gently tapping the plants, and caught by the EFIC (which was waved once or twice in the air above the plants).