

EXCLUSION OF ANTS USING HOLES OF VARIOUS DIAMETERS

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In the design of ant bait stations or utility housings, knowledge of the minimum widths of cracks or holes that ants of different species can crawl through can be useful to make these objects "ant proof" or ant-selective. This trial was conducted to describe minimum hole sizes that will allow passage of worker ants of the red imported fire ant, *Solenopsis invicta* Buren, or the red harvester ant, *Pogonomyrmex badius* (Latreille).

Materials and Methods

Plastic vials (16 mm by 53 mm) with screw-on plastic caps were used for this trial. Seven or more holes were drilled into the caps, 0.6, 0.7, 0.8, 0.9, 1.6, 2.1, 2.3, 2.6, 2.8 and 3.3 mm in diameter. Ten or more worker ants, either the red imported fire ant and or the red harvester ant, were placed in vials on 11 March 1994. Vials were then placed in sealed jars. On 29 March, the head widths of ants which had escaped from the vials into the jars were measured.

Results and Discussion

Red imported fire ants were unable to escape from vials with 0.6 mm holes drilled into the caps. Head measurements of fire ant workers escaping from the vial with 0.7 mm holes were 0.5 to 0.6 mm wide (0.6, 0.6, 0.6, 0.5, 0.6, 0.5, 0.5, 0.5, 0.6, 0.5, 0.5).

Red harvester ants were unable to escape from vials with holes drilled into the caps that were 2.1 mm or less. Red harvester ant head widths of those escaping from vials with 2.3 mm holes drilled into the caps were 2.2 and 2.3. Ants remaining in the vials measured 2.2 to 2.4. All harvester ant escaped from the vial with 2.6 mm holes. Their head widths measured 2.1 to 2.5 mm (2.3, 2.1, 2.2, 2.5, 2.1, 2.0, 2.3, 2.3).

These results demonstrate that hole size into bait stations can be used to exclude certain larger ant species, preserving them from the potentially toxic effects of the ant bait. For instance, Amdro® Fire Ant Granules (hydramethylnon) is registered for the control of both the red harvester ant and the red imported fire ant. In areas where red harvester ants are desirable, such as in areas where these ants serve as the sole food source for the horned-toad lizard, ant-selective bait stations could make this product species-selective.

Results also demonstrate the difficulty in designing structures to exclude the red imported fire ant. These ants have been shown to have an affinity for electricity. In order to make housings of these or other utilities "fire ant proof", the design and construction must prevent holes or cracks that are 0.6 mm or more in width.