



Aedes aegypti in 2020: Potential source preference

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Introduction

Aedes aegypti (L.) ecology and container preference varies widely based on local environment, human behavior, and container availability.^{1,2} Understanding the regional differences within individual districts can help with choosing the most cost-effective control options, refining outreach efforts, and developing a baseline to measure the success of control programs.^{3,4}

However, these detailed surveys are labor intensive and difficult to carry out in small districts with limited resources. Frequencies of source types and presence of immature *Ae. aegypti* may provide an alternative means to identify potential *Ae. aegypti* source preferences and relative contribution to overall mosquito production.

This project used 2020 property inspection data to identify common source types on properties and their contribution to inspections where mosquito production was found.

Objectives

1. Identify common *Ae. aegypti* source types
2. Determine relative contribution of source type to inspections with mosquito production

Materials & Methods

Inspections

- Sources were categorized into 15 source types
- Samples were collected from each positive source type for species identification
- Source type was classified as positive or negative for immature *Ae. aegypti* for each inspection

Analysis

- Percent Breeding: Percent of inspections for each source type that were positive for immature *Ae. aegypti*
- Percent Contribution: Frequency of source type among inspections with immature *Ae. aegypti*



Figure 1. Sources where immature mosquitoes were found were plant trays (A), miscellaneous containers (B), and yard drains (C).

Table 1. Common source types found during property inspections. The percent breeding is determined by the number of inspections where the source type had immature *Ae. aegypti* out of the total number of inspections with that source type. The contribution of the source type is the frequency of the source type out of inspections with immature *Ae. aegypti*.

Source Type	Inspections (N)	Breeding (%)	95% CI (Lower-Upper)	Contribution (%)	95% CI (Lower-Upper)
Misc. Containers	2,094	5.8	4.9 - 6.9	14.7	12.4 - 17.2
Plant Trays	1,387	13.3	11.6 - 15.2	22.2	19.5 - 25.2
Decorative Items	1,094	1.5	0.9 - 2.4	1.9	1.2 - 3.1
Pet Dishes	1,034	5.8	4.5 - 7.4	7.2	5.6 - 9.2
Drains	885	13.1	11.0 - 15.5	13.9	11.8 - 16.5
Fountains	720	11.7	9.5 - 14.2	10.1	8.2 - 12.3
Trash Cans	718	2.4	1.5 - 3.8	2.0	1.3 - 3.2
Toys	673	1.9	1.1 - 3.3	1.6	0.9 - 2.7
Birdbaths	582	7.9	6.0 - 10.4	5.5	4.2 - 7.3
Other	560	12.7	10.2 - 15.7	8.5	6.8 - 10.6
Plants	464	10.1	7.7 - 13.2	5.6	4.3 - 7.4
Tarps	305	1.3	0.5 - 3.3	0.5	0.2 - 1.2
Kiddy Pool	300	3.3	1.8 - 6.0	1.2	0.7 - 2.2
Tires	245	0.8	0.1 - 2.9	0.2	0.04 - 0.9
Ponds	108	36.1	27.7 - 45.5	4.7	3.4 - 6.3

Results & Discussion

Vector control technicians conducted 3,178 property inspections, classifying sources into 15 source types (Table 1). The *Other* source type included containers with a clear purpose that were unlikely to be discarded by the homeowner such as wheel barrels as well as large, immovable items i.e., neglected pools.

The three most common source types among inspections with *Ae. aegypti* production were plant trays at 22.2%, miscellaneous containers at 14.7%, and drains at 13.9% (Figure 1).

Although often cited as a common source in other areas, tires were present in only 245 of the inspections and were found breeding less than 1%, making their overall contribution to breeding only 0.2% (Table 1).

Small backyard ponds had *Ae. aegypti* in 36.1% of inspections, however, their overall contribution to inspections with mosquito production was only 4.7% (Table 1).

Conclusion

Using property inspection data can serve as a substitute to approximately identify *Ae. aegypti* source preferences. Focusing public education and outreach efforts on controlling the source types that contribute the most to *Ae. aegypti* production is likely to be more cost-effective than broad messages, especially if they incorporate a source-specific call-to-action for residents.⁵⁻⁷

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Further Information

If you have a question or comment, please contact Crystal Grippin at clgrippin@deltavcd.com or at (559) 732-8606 extension 114.

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