# Calculating Areas for Pesticide Treatment around the Home

**Bastiaan M. Drees**
Extension Entomologist Emeritus
Texas A&M AgriLife Extension Service

Gardens, lawns or turfgrass areas, and ornamental planting beds occasionally require treatment with pesticides, which includes fertilizers, fungicides, and insecticides. Use rates on product labels usually specify the quantity of the product or diluted product to use in an area such as per 1,000 square feet. The first step in using these products correctly is calculating the size of the area to be treated.

The area of a rectangle or square is equal to length times the width of the area (Fig. 1). However, the shape of most lawns is not a simple square or rectangle. In these cases, make a map of the home and property (Fig. 2) and divide the property into simple rectangle and square elements. To calculate the total area to be treated, calculate the size of the individual areas and add them together.
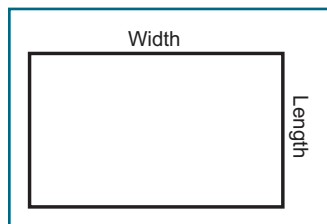


**Figure 1. Area of a rectangle or square = length x width.**
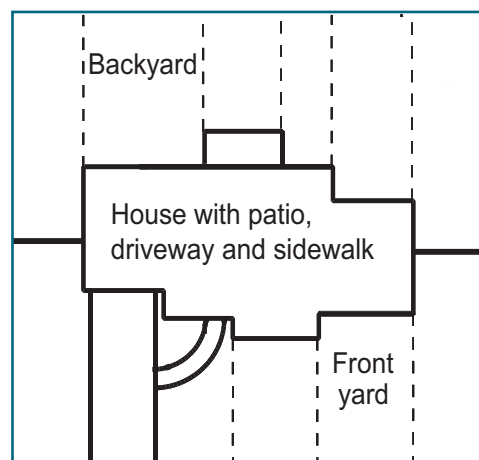


**Figure 2. Divide the property into simple rectangular elements.**

The table below may be useful in making these calculations.

| Area (square feet) | Acre* | Hectare** |
|---|---|---|
| 100 ft² (10 ft x 10 ft) | 0.002 | 0.0008 |
| 1,000 (10 x 100) | 0.023 | 0.0568 |
| 10,000 (100 x 100) | 0.229 | 0.0927 |
| 43,560 (208.7 x 208.7) | 1.000 | 0.4047 |
| 100,000 (100 x 1,000) | 2.296 | 0.9292 |
| 1,000,000 (1,000 x 1,000) | 22.957 | 9.2906 |

\*  Per acre areas = length (ft) x width (ft)/43,560 sq ft; one acre = 4.047 sq meters
\*\* One hectare = 2.471 acres; acre value/2.471 = hectare value

In some cases, the landscape has an irregular pattern or contains non-treatable, irregularly shaped areas such as ponds, swimming pools, or other areas that are more circular. Calculate the area of a circle by measuring the radius of the circle (r) and using the formula: π x $r^2$, where π = 3.14159 (Fig. 3).
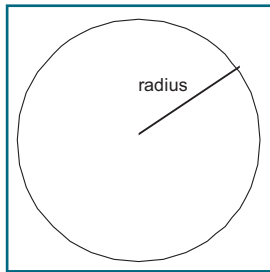


**Figure 3. Calculate the area of a circle by measuring the radius (r) and multiplying this value by itself ($r^2$) and then by π or 3.14159.**

If the radius cannot be measured and the area is roughly circular, calculate the area by using the formula:

**Area (acres) = circumference (feet)$^2$ ÷ 547,390**

In situations with circular areas or a combination of somewhat circular and rectangular areas, use the area of these shapes to approximate the size of these areas (Fig. 4). If this surface is not to be treated, subtract the total (sum) of these areas from the rectangular area to be treated.
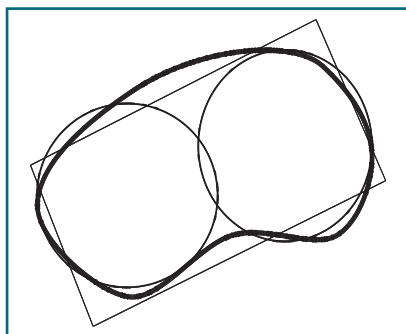


**Figure 4. Simplifying irregular areas into circles and/or rectangles.**

## Acknowledgment

Lisa Lennon and Nathan Riggs reviewed this manuscript.

## For More Information

For additional information, see *Pond Measurements* by Eric R. Norland, Extension Fact Sheet A-2-98, The Ohio State University, 2021 Coffey Road, Columbus, Ohio 43210, http://www.ag.ohio-state.edu/~ohioline/a-fact/0002.html

## References

*Pond Measurements*
ohio.one.osu.edu/a-fact/0002.html

*Managing Red Imported Fire Ants in Urban Areas*
www.extension.org/pages/11004/managing-imported-fire-ants-in-urban-areas-printable-version

*Broadcast Baits for Fire Ant Control*
www.agrilifebookstore.org/product-p/e-628.htm

*Fire Ant Control: The Two-Step Method and Other Approaches*
www.agrilifebookstore.org/product-p/ento-034.htm

**For more information regarding fire ant management,
see Extension publications *Managing Red Imported Fire Ants in Urban Areas,
Broadcast Baits for Fire Ant Control*, or *Fire Ant Control: The Two-Step Method
and Other Approaches* posted on http://AgriLifeBookstore.org.**