

### Fixed Area Plot Sampling

In fixed area plot sampling, we assume that the plot area is representative in the remainder of the area of interest. Usually statistics about the stand are reported on the standard unit of measure (e.g., acres in English units and hectares in metric units). The consequence of the above assumption is that if, for example, we measure one tree in a  $1/4$  acre plot we assume that there are four trees just like the one we measured per acre.

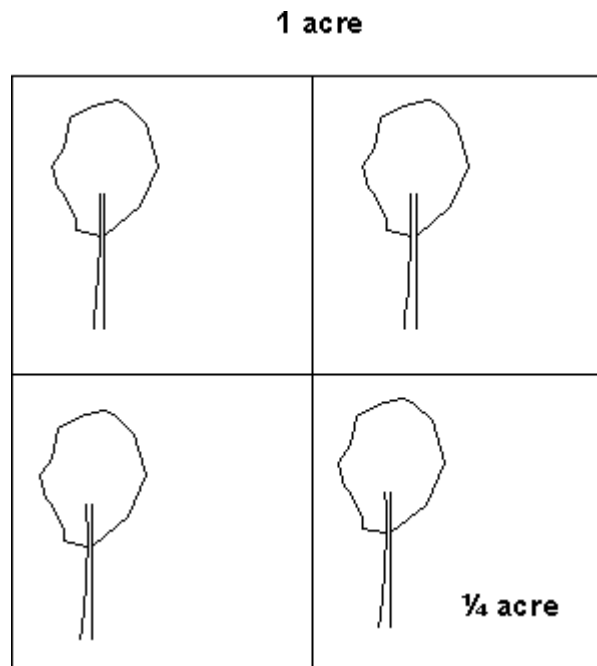


Figure 1. Illustration of the meaning of a fixed area expansion factor

This kind of sampling is the easiest to calculate as the expansion factor or TPA multiplier is the reciprocal of acre fraction. In this method, we spend most of the time measuring the tree sizes that are most frequent in the stand. Commonly, small trees are most frequent in forest so this method will give you a better picture of the numbers and size of small trees.

#### Determining plot dimensions

Fixed are plot are calculated as a fractional area of a unit area. Common unit areas are used as reporting units. They are usually *acre* for imperial units and *hectares* for metrics units. At this point we need to know the number of square measurement units that are in our unit area.

## Natural Resource Biometrics

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Table 1. Square base units in Unit areas.

Unit area	Measurement Units	Area in Measurement Units
Acre	Feet	43,560
Hectare	Meters	10,000
Square Mile	Feet	27,878,400
Square Kilometer	Meters	1,000,000

If you know the fractional part of the unit area divide the unit area by the denominator of the fraction. This will yield the square units in the plot.

- If the plot is square just take the square root of the area to determine the length of one side of the plot.

$$side = \sqrt{A}$$

- If the plot is round use the following formula to determine the plot radius.

$$r = \sqrt{\frac{A}{\pi}}$$

where **A** is the plot area, **pi** is the constant **pi** (3.1415154) and **r** is the radius of a round plot.