Density Measurements using Fixed Circular Plot of 1/100th acre size

The Brush Management (314) standard requires an inventory of the density of woody species to be treated. This is a brief description of how to conduct the inventory and assessment. Use the Tree/Shrub Density Using Fixed Circular Plots form to record field data. Enter field data into the form for auto-calculation.

Locate the center of your plot (in a representative area), stretch out the 11.8 ft tape from the center to the outer edge, and count the trees/shrubs within that plot as you move around the outer edge. This sounds easy, but can get pretty crazy if you can't simply lift the tape above the plants. You may have to zig-zag between the plants a bit to get the tape stretched out and count the stems. It might be a 2-person job.

If you don't use the auto-calculation on the data form, obtain the density in this way: After you have counted the stems within that fixed plot, multiply by 100 to get the total number of stems per acre. Running more than one 1/100th acre plot to get density is recommended, then average the results. A minimum of 3 fixed circular plots is required for any cost-shared practices using this method. If there are trees/shrubs in the treatment area that should remain (eg, koa, ohia, etc), try to establish a fixed plot that has those species and the weedy species within it. Then you can evaluate if the desirable species were left intact post-treatment.

Note that if you want to know the density by species, you'll need to count and record the information by species. So count the waiawi separate from the guava and the lantana, etc. It can be very helpful to know the density by species, not just the total number of trees/shrubs within the plot (irrespective of species).

Take your benchmark density measurements to complete the jobsheet (314-Brush Management or 595-Pest Management). After the treatment has been applied, return to your original fixed plot locations and take measurements again. Do not certify the practice as completed until the required success parameter is achieved. For example, if the producer needs to reduce the density waiawi from 200 plants per acre to <20 plants per acre, you cannot certify until that <20 per acre amount has been achieved. That's another reason why multiple fixed plots (rather than just one) are important to establish and monitor – there is less room for bias and disagreement over the density numbers you arrive at when there are more plots and you average the results between plots.

To find the radius of your fixed 1/100th acre plot:

$A = pi(r^2)$

Area of a 1/100th acre plot = 43560 ft^2/100 = 435.6 ft^2

pi = 3.142

Find the radius (r).

r^2 = Area/pi = 435.6 ft^2/3.142 = 138.64 ft^2

r = (138.64 ft^2)$^{-2}$ ….. r = the square root of 138.64, so r = 11.78 ft.

The radius for a 1/100th acre fixed circular plot = 11.78 ft.

Use the *Tree/Shrub Density Using Fixed Circular Plots* form to record and summarize data.