

are consistently strong, such as along the coasts in Florida, sprinklers must be spaced closer together than under no-wind conditions. For no-wind conditions, sprinklers are typically spaced at 55% to 60% of their diameters of coverage. This should be reduced to 50% for low wind speeds (less than 5 mph) and to 30% for wind speeds above 10 mph.

Uniformity of water application with sprinkler irrigation systems is usually reported as either the Distribution Uniformity (DU) or Christiansen's Uniformity Coefficient (UC).

Distribution Uniformity

DU is calculated as the ratio of the depth measured in the low quarter of the irrigated area to the overall average depth applied.

$$DU = 100\% \frac{\text{Average Low Quarter Depth of Application}}{\text{Overall Average Depth of Application}} \quad (3)$$

where DU is expressed as a percent. The average low quarter depth is determined by inspecting the data collected and calculating the average of the smallest 1/4 of the measured depths. The overall average is the arithmetic average of all of the catch can data. The computations are simplified if the total number of data are a multiple of 4.

DU can be calculated using the data shown in Figure 2. The low quarter of the 16 data points are the four values: 0.24, 0.25, 0.27, and 0.28 inches, shown underlined in Figure 2. The average of these four low quarter values is 0.26 inches. The overall average of all 16 points is 0.31 inches. Then, from Equation (3):

$$DU = 100\% (0.26 \text{ inches}) / 0.31 \text{ inches} = 83.9\%$$

Christiansen's Uniformity Coefficient

Christiansen's uniformity coefficient (UC) is another widely-used method of calculating the uniformity of water application from sprinkler irrigation systems:

$$UC = 100\% \left(1 - \frac{\text{Average Deviation from the Average Depth of Application}}{\text{Overall Average Depth of Application}} \right) \quad (4)$$

where UC is expressed as a percent. The average deviation from the average depth of application is calculated by averaging the absolute values of the differences between each of the individual depths and the average depth, and the overall average depth of application is defined as before.