

System Calibration

Information presented in manufacturers' charts is based on average operating conditions with relatively new equipment. Discharge rates and application rates change over time as equipment gets older and components wear. In particular, pump wear tends to reduce operating pressure and flow. With continued use, nozzle wear results in an increase in the nozzle opening which will increase the discharge rate while decreasing the wetted diameter.

You should be aware that operating the system differently than assumed in the design will alter the application rate, diameter of coverage, and subsequently the application uniformity. For example, operating the system with excessive pressure results in smaller droplets, greater potential for drift, and accelerated wear of the sprinkler nozzle. Clogging of nozzles can result in pressure increase. Plugged intakes or crystallization of mainlines will reduce operating pressure. Operating below design pressure greatly reduces the coverage diameter and application uniformity.

For the above reasons, you should field calibrate your equipment on a regular basis to ensure proper application rates and uniformity. Field calibration at least once every three years is recommended.

Calibration involves collecting and measuring flow at several locations in the application area. Any number of containers can be used to collect flow and determine the application rate. Rain gauges work best because they already have a graduated scale from which to read the application amount without having to perform additional calculations.

However, pans, plastic buckets, jars, or anything with a uniform opening and cross-section can be used provided the liquid collected can be easily transferred to a scaled container for measuring.

For stationary sprinklers, collection containers should be located in a grid pattern throughout the application area at several distances from sprinklers. Collection gauges should be spaced $1/4$ the effective sprinkler spacing apart.

For traveling guns, sprinklers should be located along a transect perpendicular to the direction of pull. Set out collection containers no further than 25 feet apart along the transect on both sides of the gun cart. You should compute the average application rate for all collection containers and the application uniformity for the system.

You should obtain a uniformity coefficient of 0.5 or greater for stationary sprinkler systems and the uniformity coefficient for a traveling gun system should exceed 0.7. If the uniformity coefficient computed for your system is less than these values, you should contact your irrigation dealer for assistance.