

actual uniformity would be expected to be in the range of 86.5% to 93.5% if the estimated value was 90%, while it could be expected to range as much as 43.8% to 76.2% if the estimated value was 60%. The smaller confidence limits occur at the higher uniformities because it is very improbable that samples would be randomly selected that would indicate a high uniformity if the uniformity was actually low.

From Table 4, the confidence limits decrease as more samples are taken. This indicates that we are more confident in the results if more measurement are made. In fact, the confidence limits decrease by a factor of two when the number of samples is multiplied by four. If the uniformity estimates are low when only 18 samples are taken, the need to take more data is indicated in order to improve the confidence in the estimate. Thus, Table 4 can be used to determine the number of samples that must be taken in order to estimate the actual uniformity with the desired accuracy.

Summary

In summary, a method was presented to evaluate micro irrigation uniformity of water application under field conditions. Both pressure and flow rate data are required for these evaluations. These tests not only indicate whether a problem with water application uniformity exists, but also demonstrate whether the problem is due to the system hydraulics or to the emitter performance.

References

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