Table 2. Sample data set for Figure 1 example.

Data Point	Pressure (psi)	Measured Time (sec)
1	26	65
2	27 (high #2)	62 (low #1)
3	22 (low #3)	80
4	25	74
5	21 (low #1)	90 (high #1)
6	26	68
7	26	64 (low #2)
8	24	76
9	25	72
10	28 (high #1)	64 (low #3)
11	25	67
12	24	81
13	23	86 (high #3)
14	24	77
15	21 (low #2)	88 (high #2)
16	25	72
17	24	78
18	27 (high #3)	66

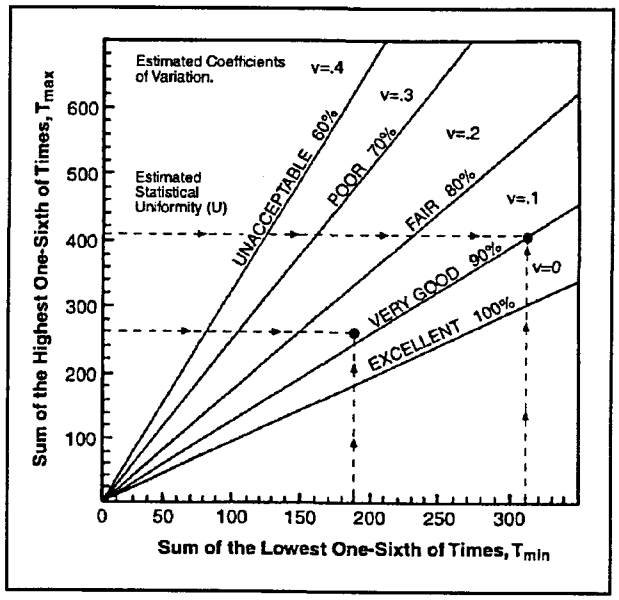

Figure 4. Microirrigation field uniformity calculator based on emitter flow rates.

Table 3. Confidence limits (95% level) on statistical uniformity estimates.

Uniformity US (%)	Number of Samples				Variability Vqs
	18	36	72	144	
90	3.5	2.4	1.7	1.2	0.1
80	7.3	5.0	3.4	2.4	0.2
70	11.2	7.8	5.4	3.8	0.3
60	16.2	10.9	7.6	5.4	0.4

325 sec. The smallest times recorded were 89 sec, 91 sec, and 87 sec. The sum of these three measurements, T_{min}, is 267. From Figure 4, the intersection of the vertical line drawn at T_{min} and the horizontal line drawn at T_{max} falls between 90% and 100% which can be interpreted as being an "Excellent" uniformity.

The method presented above is a statistical method. The degree of certainty that the values read from Figure 4 are accurate changes depending on the degree of variation among the measurements. If the uniformity calculated from 18 samples is 90%, the confidence limits for this uniformity are ±3.5% (Table 3). This means that we can be confident (with 95% certainty) that if we need 90% uniformity, the actual field uniformity would be in the range of 86.5 to 93.5%. However, as indicated in Table 3, we are less confident of the results when the uniformity is low. If the first 18 measurements indicate low uniformity, the number of measurements should increase to 36 or 72 depending upon the calculated uniformity. Note that T_{max} and T_{min} are then calculated from 1/6 of the measurements which is 6 and 12, respectively.

Field procedure summary for evaluation of nursery microirrigation system uniformity:

- Start the system and run it at its design operating pressure long enough to purge air from the lines.
- Measure the amount of time required for each of 18 (or more) emitters to fill a container. Be sure that the emitters sampled represent all parts of the irrigation system.
- Compute T_{max} by adding 3 longest times (or 1/6 of the number of emitters measured) required to fill the container.