5.2. Precision

The precision of a measurement is the degree to which repeated measurements under unchanged conditions show the same results, In other words, if you measure the same thing 10 times, how similar are your 10 results? Most likely, not all 10 measurements will give the exact same results, but how different are they? Note that precision is very different from accuracy: you may get 10 very similar results, but they could all be wrong. In that case the measurements are precise, but not accurate.

Precision can be separated into two components:

Repeatability — the variation in measurements found when keeping the instrument, user, and conditions constant while the measurements are repeated during a short time period.

Reproducibility — the variation in measurements while using the same measurement process among different sensors/meters and operators, and over longer time periods.

Figure 5. An example of high precision, but low accuracy, with the dots representing measurements and the bull's eye representing the true value. All measurements are very similar, but not close to the true value.

Van Iersel, M., 2014. All About Sensors. *In:* Managing Irrigation through Distributed Networks Knowledge Center. M. Chappell, P.A. Thomas and J.D. Jea-Cox. (Eds.). Published online at https://myelms.umd.edu/courses/1092859. 17p.