

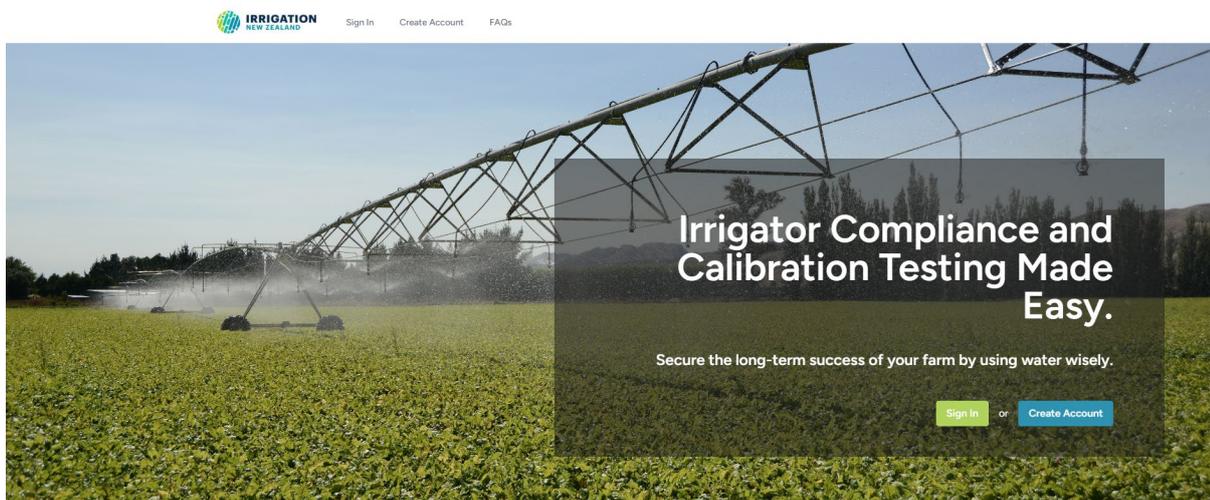


Undertaking your field test

Catch Can testing – requirements and process for undertaking a test

Catchcan.co.nz is designed to help support good management practice and help growers/operators identify issues within irrigation systems.

Catchcan.co.nz reports use field data to provide a summary of applied depth measured and a calculation of the system's uniformity (evenness) of application.



What is involved?

Catchcan.co.nz follows IrrigationNZ's guidelines and supports good management practice. It offers two test types - a basic pivot calibration and a detailed performance audit – helping users assess key performance indicators (KPIs) and improve irrigation efficiency in New Zealand.

Users input field measurements into the tool to generate reports on applied depth (mm), distribution uniformity (DU_q), and other metrics. While not a full system performance assessment, these tests help growers identify areas for improvement.

For both the calibration and performance audit tests, the user places a set number of identical catch cans (buckets) in the field. The irrigation system then operates over them, and the user measures the water collected in each bucket.

Along with recording key performance indicators and system settings, this data is entered into Catchcan.co.nz, which generates an easy-to-read report. The report helps users assess whether their system aligns with IrrigationNZ performance guidelines.

What will the testing tell you?

Applied Depth – The depth of water applied by the irrigator. The tool compares the measured applied depth to the target application as a calibration check.

Identifying discrepancies in applied depth helps users fine-tune system settings, ensure correct water application, and detect wear and tear that may affect system performance. It can also highlight a risk factor for site issues such as ruts, ponding, or infrastructure impacts.

Distribution Uniformity (DU_{lq}) – Also known as Lower Quartile Distribution Uniformity, this metric describes how evenly water is distributed to plants. A higher DU_{lq} indicates more uniform water application across the irrigated area. Greater uniformity improves confidence that measurements accurately reflect the system's performance.

Application Intensity – The rate (mm/hour) at which water is applied, similar to rainfall intensity. If it exceeds soil infiltration capacity, it can cause ponding, runoff, and inefficiencies.

For centre pivots, intensity increases along the machine's length - low at the inner spans and highest at the end. This tool calculates intensity at the end tower, representing the highest rate and a significant portion of the irrigated area.

Note: Application intensity is not a pass/fail metric but helps you understand your system. It can guide discussions with irrigation partners on potential hardware upgrades, technology improvements, or operational changes to enhance irrigation performance.

What are the limits of a catch can test?

Catchcan.co.nz and other tools are NOT full system assessments. For a full system performance assessment, please discuss with your irrigation provider or look up the [Irrigation New Zealand Register of Qualified Individuals](#) to find a qualified performance assessor in your region.

A Catch Can test provides an overview of whether your irrigator is performing to design parameters with respect to the overall amount of water applied (applied depth) and how uniformly this is applied, in comparison to limits set out in the [New Zealand Piped Irrigation System Performance Assessment Code of Practice](#).

It is a snapshot of how you are running the irrigator and the system at that point in time.

Preparing for a Catch Can Test

1. Inspect Your Irrigator

- Check for leaks, clogged nozzles, or any sprinkler issues.
- Ensure pressure gauges are readable and working.
- Compare a few nozzles to the sprinkler chart to confirm proper setup.

2. Check the Wind Forecast

- Wind affects test accuracy. Ideal wind speed is **below 3 m/s**.

3. Gather Equipment

- **Catch cans** (e.g., 9L buckets, all the same size).
- **Measuring cylinder** (2L with 10ml increments).
- **Measuring tape or walking wheel**.
- **Stopwatch & pens/pencils**.
- **Printed Field Test Records Sheet** from Catchcan.co.nz (lists bucket count & layout).
- This is critical- for catchcan.co.nz you enter your irrigators before you do the test. This will give you a "Field Test Records sheet" you can take to the field to record the information before returning to the office to enter into the tool for processing.

Setting Up the Test

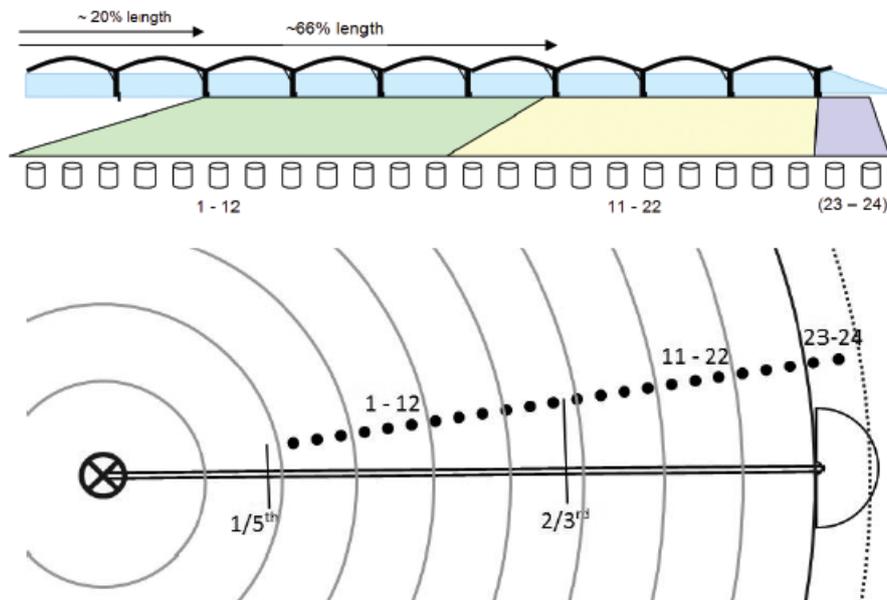
4. Choose a Test Area

- Ensure sprinklers fully pass over all buckets.
- Pick a **flat area** to avoid skewed results.

5. Layout Buckets (as per Field Records Sheet)

- **Calibration Test** → One row of buckets (~25-30 for a 400m pivot).
- **Audit Test** → Two rows, rows 10m apart (~60-70 buckets for a 400m pivot).

(Remember to follow your Field Test Records sheet – see steps above)



The fig above is an example of the calibration test bucket layout, where one row of buckets is placed in the field, with the inner 2/3 of the machine spaced at one spacing, with the outer 1/3 at a different spacing.

An Audit test is two rows of buckets 10m apart, with the buckets in row A offset by 5m from row B- follow the distances as outlined in the field test report for correct locations.

Running the Test

6. Start the Irrigator

- Begin at **0% speed**, let it reach full pressure, then set test speed- this ensures you don't start walking over the buckets before you are ready, which will skew results.
- Ensure it fully passes over buckets before stopping.



7. Record Key Data on your Field Test Records sheet.

- Pivot **application depth**, speed, and angle, **Wind speed & direction** **End pressure** (if available) to check for system inconsistencies.
- Your Field Test Records sheets give you the items you need to record- some are optional but will help you work through issues in the event of a poor performance.

8. Measure Travel Speed

- Mark **20m** on the last drive unit.
- Time how long the pivot takes to pass this mark.

9. Monitor for Issues

- Look for **irregular sprinkler patterns**, pressure fluctuations, or leaks.

Measuring & Recording Results

10. Measure Water in Catch Cans

- Use a **measuring cylinder** to record water volume from each bucket.
- Note any **tipped buckets** or anomalies (avoid excluding buckets. If you do it may mean your test is not relevant- you are better to record the volumes high or low, and justify the issue as seen in your notes).
- **Enter Data into Catchcan.co.nz**
- Select your irrigator, input test type (Audit or Calibration), and enter data.
- Save results (cannot be edited after saving).

Understanding Your Results

- *Distribution Uniformity (DU)*: Evaluates how evenly water is applied (**>0.80 is good**).
- *Christiansen Uniformity (CU)*: Measures overall variation (**>0.85 is good**).
- *Measured Application Depth*: Should be **within 10%** of target depth.
- *Application Intensity*: High intensity may indicate **runoff or leaching risks**.

Next Steps Based on Results

- If results are within acceptable ranges, schedule the next routine test.
- If results show inconsistencies, review pressure settings, sprinkler pack condition, and consult your irrigation specialist as necessary.