IRRIG8Quick™

Effluent Irrigation Quick Calibration

Worksheet for Travelling Effluent Irrigators (>15% overlap)
Download from: www.pagebloomer.co.nz/resources/irrigation

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Measurement Procedure

What equipment will you need?

This guide and the worksheet

24 Collectors of the same diameter (at least 150 mm) – 9 Litre plastic buckets are good
1 Measuring cylinder (about 2 Litre)
1 20 m tape
2 Electric fence standards
1 Stop watch
1 Pen or pencil

Application test

1 Set your 24 buckets in a row across the direction of irrigator travel [**T1** in Diagram 1]
2 Start the irrigator away from (before any water can reach) the line of buckets
3 Run the irrigator until it is well past wetting the buckets. Measure the irrigator speed as it passes over the test buckets
4 Measure the volume of water caught in each bucket and record on the Record Sheet

Dealing with overlap

1. Place a marker half way between adjacent runs.
2. Mark the extent of obvious wetting when the irrigator runs. This is the "Irrigator wetting width".
3. If the wetting width is greater than the run spacing width, you need to account for overlap.
4. Place two buckets between the edge of the lane and the edge of the wetting width.
5. Mirror this inside the edge of the lane, with two buckets at the same spacings from the edge of the lane
6. Arrange eight more buckets evenly to cover the area back to the centre line (the hose or cable).
7. Repeat 4, 5 & 6 on the right hand side.

Speed test

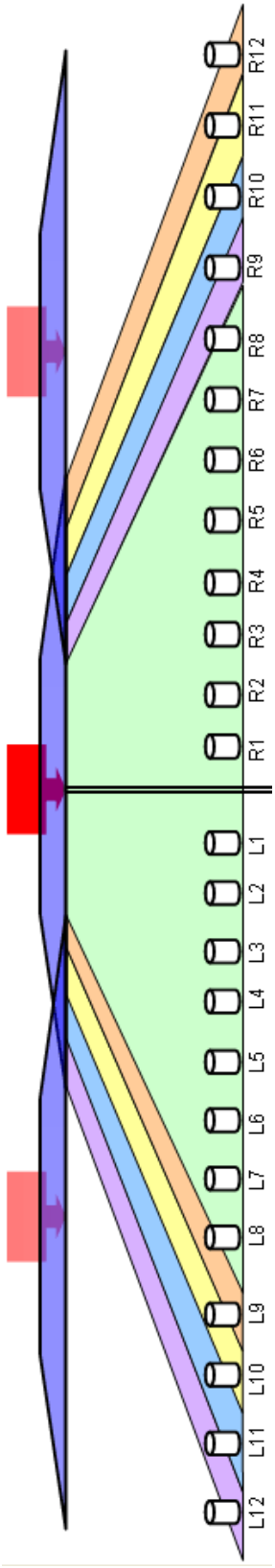
1 Set two markers (e.g. fence standards) 5.0m apart along the hose or cable
2 The markers should cross the line of collectors
3 Measure the time for the irrigator to travel between markers.

Test Details	
Farm Name	
Tester's Name	
Test Date	
Test Machine	
Test Field/Run	
Target Irrig Depth [mm]	
Test distance [m]	
Test time [min]	
Speed [m/min]	
Test Flow [L/min]	
Test Pressure at pump [kPa]	
Test Pressure at irrigator [kPa]	
Wind conditions	
Nutrient test N [kg/m^3 or mg/L]	
Nutrient test K [kg/m^3 or mg/L]	

Field Details		
a	Hydrant/lane spacing (Diag. 1) [m]	
b	Run length (Diag. 1) [m]	
c	Area Irrigated (**a** x **b** / 10,000) [ha]	
d	Number of runs	
e	Total Area (**c** x **d**) [ha]	
f	Irrigator wetting width (Diag. 1) [m]	
g	Wetting pattern width (Diag. 1) [m]	
h	Wetting area (**f** x **g**) [m^2]	
i	Bucket diameter (measure) [mm]	
j	Open area (**i** / 2000)^2 x 3.14 [m^2]	
k	Applied Depth (from next page) [mm]	
m	High Quartile Depth (k x DU_{hq}) [mm]	
n	Speed (from Test Details) [m/min]	
p	Flow Rate (**a** x **k** x **m**) [L/min]	
q	Application Rate (**p** / **h** x 60) [mm/hr]	

Recording Sheet for Travelling Effluent Irrigator Calibration (>15% OVERLAP)

Enter your field measurements from buckets in Column 1.
Complete the overlap adjustments in Column 2.
Complete the calculations in Column 3.



Column 1	
Collected Volumes	
R12	1
R11	2
R10	3
R9	4
R8	
R7	
R6	
R5	
R4	
R3	
R2	
R1	
L1	
L2	
L3	
L4	
L5	
L6	
L7	
L8	
L9	1
L10	2
L11	3
L12	4

Column 2	
Overlapped Volumes	
Add Boxes R11 and L10 from Collected Volumes and enter in L10 Below. Repeat for R10 and L11	
R10	3
R9	4
R8	
R7	
R6	
R5	
R4	
R3	
R2	
R1	
L1	
L2	
L3	
L4	
L5	
L6	
L7	
L8	
L9	1
L10	2
SUM of 20	
AVG of 20	

Column 3	
Calculations	
Enter the highest five volumes in boxes 1 – 5	
1	
2	
3	
4	
5	
SUM of 5	
AVG of 5	
Calculate DU_{hq}: Divide average of highest five by average of all twenty	
AVG of 5	
AVG of 20	
DU_{hq}	
Calculate average applied depth: Average volume ÷ Bucket Area ÷ 1000	
AVG of 20	
Area m^2	
Depth mm	
Calculate N&K Loading mm x g/L÷ 100 OR mm x kg/m^3 x 10	
Depth mm	
N | K conc	|
N | K kg/ha	|