Irrigation Performance Quick Test

Worksheet for Linear Move Irrigators

Download from: www.claw.net.nz/resources/irrigation

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Measurement Procedure

What equipment will you need?

This worksheet and the guide sheets

24 Collectors of the same diameter (>150 mm)

1 Measuring cylinder (about 2 Litre)

1 5 m tape

2 Electric fence standards

1 Stop watch

1 Pen or pencil

Speed test

1 Set two markers (electric fence standards) 5.0m apart beside the centre wheel track

2 The markers should be in line with the collectors

3 Measure the time for the irrigator to travel between markers – they move when the carriage hits them

Application test

1 Set 24 collectors (buckets) in a row along the length of the irrigator

2 Arrange eight buckets at even spacing under the first span or two of the machine.

3 Arrange eight more buckets at even spacing in the middle of the machine.

4 Arrange eight more buckets under the last span or two of the machine.

5 If there is an end gun, arrange two of these buckets at even spacing between the end wheel track and the extent of significant wetting

6 Start the irrigator away from (before any water can reach) the line of buckets

7 Run the irrigator keeping it going until it is well past wetting the buckets. Measure the irrigator speed as it passes over the test buckets

8 Measure the volume of water caught in each bucket and record on the next page

Test Details		
Farm Name		
Tester's Name		
Test Date		
Test Machine		
Test Position		
Test Pressure [kPa]	At pump	
	At Irrigator Entry	
	At Irrigator End	
Wind conditions		

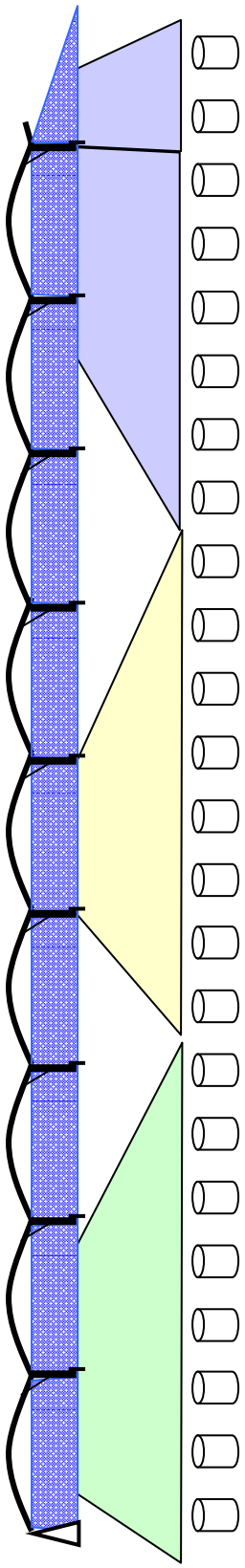
Machine Details		
a	Machine length [m]	
b	End gun extra length [m]	
c	Travel distance one rotation [m]	
d	Area (**a** + **b)** x **c** /10,000) [ha]	
e	Number of runs	
f	Total Area (**d** x **e**) [ha]	
g	Wetting width [m]	
h	Wetting length [m]	
I	Wetted area (f x g) [m^2]	

Speed Test (at end wheels)			
Test Distance			
Test time [min]			
Speed [m/min]			

Collector Bucket Details		
i	Bucket diameter [mm]	
j	Open area (i / 2000)^2 x 3.14 [m^2]	

Worksheet for Linear Move Irrigator Performance Quick Test

Enter your field measurements from buckets in Column 1.
Complete the calculations in Columns 2 and 3.



Column 1	
Collected Volumes	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Column 2	
Calculations	
Calculate Low Quarter Average: Enter the lowest six volumes in boxes below	
Low 1	
Low 2	
Low 3	
Low 4	
Low 5	
Low 6	
SUM of 6	
AVG of 6	
Calculate Overall Average (all twentyfour)	
SUM All 24	
AVG All 24	
Calculate DU: Divide average of lowest six by average of all 24	
AVG of 6	
AVG of 24	
DU	
Calculate average applied depth: Average volume ÷ Bucket Area ÷ 1000	
AVG of 24	
Area m^2	
Depth mm	

Column 3	
Calculate average depth under Sections Average volume ÷ Bucket Area ÷ 1000	
Calculate %'s of machine average depth	
Calculate averages under End Spans	
SUM 1 – 8	
AVG 1 – 8	
Depth mm	
% of AVG	
Calculate averages under middled spans	
SUM 9 - 16	
AVG 9 - 16	
Depth mm	
% of AVG	
Calculate averages under first spans	
SUM 17-24	
AVG 17-24	
Depth mm	
% of AVG	
Calculate Excess Water Factor EWF% ((Depth ÷ DU) –Depth) ÷ Depth x 100	
Overall Depth	
DU	
EWF	