

Irrigation Performance Quick Test

Worksheet for Centre Pivot Irrigators

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Measurement Procedure

What equipment will you need?

This guide and field recording sheets

24 Collectors of the same diameter (at least 150 mm) – 9 Litre plastic buckets are good

- 1 Measuring cylinder (about 2 Litres)
- 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 end wheel track
- 2 The markers should be in line with the collectors
- 3 Measure the time for the irrigator to travel between markers

Application test

- 1 Set your 24 buckets in a row starting a fifth of the way along the length of the irrigator
- 2 Arrange twelve buckets at even spacing from this point to two thirds of the irrigator length
- 3 Arrange ten more buckets at even spacing from two thirds of the irrigator length to the end wheels. The spacing will be different to the first twelve buckets
- 4 Arrange two buckets at even spacing between the end wheel track and the extent of significant wetting.
- 5 Start the irrigator away from (before any water can reach) the line of buckets
- 6 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
- 7 Measure the volume of water caught in each bucket and record on the Record Sheet

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		

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

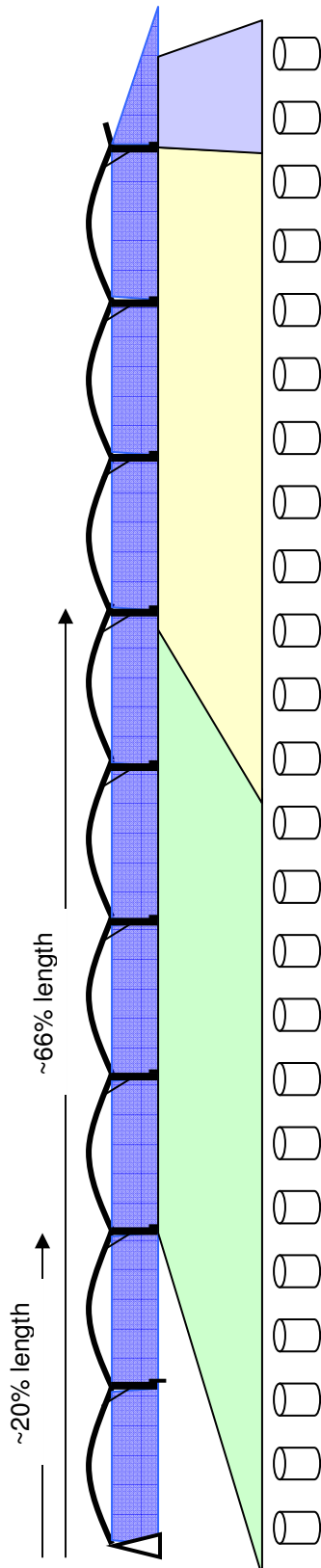
Machine Details		
a	Machine length [m]	
b	End gun extra length [m]	
c	Area (a + b) ² x 3.14 /10,000 [ha]	
d	Number of circles (can be parts)	
e	Total Area (c x d) [ha]	

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

Application Rate		
a	Depth under end spans [mm]	
b	Wetting width at end wheels [m]	
c	Speed at end wheels [m/min]	
d	Application rate at end [mm/hr] (a / b x c x 60)	

Worksheet for Centre Pivot Irrigator Performance Quick Test

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



Column 1		Column 2		Column 3	
Collected Volumes		Calculations		Calculate average depth under Sections Average volume ÷ Bucket Area ÷ 1000	
1		Calculate Low Quarter Average: Enter the lowest six volumes in boxes below		Calculate %'s of machine average depth	
2		Low 1		Calculate averages under End Gun	
3		Low 2		SUM of 1&2	
4		Low 3		AVG of 1&2	
5		Low 4		Depth mm	
6		Low 5		% of AVG	
7		Low 6		Calculate averages under end spans	
8		SUM of 6		SUM 3 - 12	
9		AVG of 6		AVG 3 - 12	
10		Calculate Overall Average (all twentyfour)		Depth mm	
11		SUM All 24		% of AVG	
12		AVG All 24		Calculate averages under inner spans	
13		Calculate DU: Divide average of lowest six by average of all 24		SUM 13-24	
14		AVG of 6		AVG 13-24	
15		AVG of 24		Depth mm	
16		DU		% of AVG	
17		Calculate average applied depth: Average volume ÷ Bucket Area ÷ 1000		Calculate Excess Water Factor EWF% ((Depth ÷ DU) - Depth) ÷ Depth x 100	
18		AVG of 24		Overall Depth	
19		Area m ²		DU	
20		Depth mm		EWF	
21					
22					
23					
24					