



PAGEBLOOMER

IRRIG8Lite Effluent Irrigation System Evaluation

Report for DairyNZ
Property Name #4

Address

Phone
Mobile
Email

NOTE: System information estimated

Application data collected by farmer
using IRRIG8Quick Guidelines

Results presented using IRRIG8Lite
calculation and graphing package

Prepared by Dan Bloomer
Page Bloomer Associates

Address Centre for Land and Water
21 Ruahapia Rd
RD2, Hastings 4172

Phone 06 876 6630
Mobile 021 356 801
Email dan@pagebloomer.co.nz

Date 28 September 2009

www.pagebloomer.co.nz

Irrigation Application Calculator - Traveller for Effluent Irrigators

Base Information

ENTER YOUR DATA IN THE WHITE CELLS

1 System Details

- a Run/lane spacing (m)
- b Irrigator wetting width (m)
- c Wetting pattern width (m)
- d Run Length (m)
- e Total number of runs

25
25
17
200
20

Average distance between runs
Spread of water both sides of hose
Average spread parallel with hose
Average length irrigated each run
Include all runs this machine irrigates

2 Water Use

- a Water meter at irrigation start (m3)
- b Water meter at irrigation finish (m3)
- c Time to irrigate one run (hours)
- d Hours actual irrigating per day (hours)

11047
11185
8
9

Exclude shifting time
Include time shifting etc

3 Energy Use

- a Pump meter at irrigation start (kWh)
- b Pump meter at irrigation finish (kWh)
- c Power cost (\$/kWh)
- d Time between readings (hours)

123220
123490
0.12
10

4 Nutrient Concentration

- a N Nitrogen concentration (kg/m3)
- b P Phosphorous Concentration (kg/m3)
- c K Potassium Concentration (kg/m3)

0.4
0.36

If lab results in mg/L, divide them by 1,000
If lab results in mg/L, divide them by 1,000
If lab results in mg/L, divide them by 1,000

Irrigation Application Calculator - Traveller

Field Test Information

Enter Field Testing Data in the White Cells	
The Blue Cells Automatically Calculate	

Collector Bucket Diameter (mm)	265
Speed test distance (m)	5
Speed Test Time (minutes)	9.5
Test Event Irrigator Speed (m/min)	0.53

Enter you measured volumes here

Bucket No	Within Irrigation Lane Buckets										Overlapped		Overlapping	
	1	2	3	4	5	6	7	8	9	10	11	12		
Left Line volume (mL)	1660	1660	1640	1680	1540	1760	2160	2800	1440	880				
Right Line volume (mL)	1520	1420	1440	1560	1480	1640	1700	2000	2020	720	160			
Left Overlap Applied Depths (mm)	30.1	30.1	29.7	30.5	27.9	31.9	39.2	50.8	26.1	18.9				
Right Overlap Applied Depths (mm)	27.6	25.7	26.1	28.3	26.8	29.7	30.8	36.3	36.6	14.5				

Lowest Five Overlap Applied Depths	14.5	18.9	25.7	26.1	26.1
Highest Five Overlap Applied Depths	31.9	36.3	36.6	39.2	50.8
Mean Applied Depth (mm)	29.9				
Mean low quarter depth (mm)	22.3				
Low Quartile Distribution Uniformity	0.75				
Mean high quarter depth (mm)	38.9				
High Quartile Distribution Uniformity	1.30				
Calculated system flow (m3)	23.6				



Press Button or Ctrl+m to Calculate Key Indicators

Irrigation Application Calculator - Traveller

Key Results

Crop/Field Details

Calculated Area irrigated per run (ha)
Calculated Total Irrigated Area (ha)

0.50
10.0

Calculated from run spacing and run length
Calculated from Area irrigated per run an number of runs

Application Details

Water meter flow rate (m3/hour)
System flow from collectors (m3)
Overall average Irrigator speed (m/min)
Test Event Irrigator Speed (m/min)
Applied Depth from Water Meter (mm)
Mean Applied Depth from collectors (mm)
Low Quartile Applied Depth (mm)
High Quartile Applied Depth (mm)
Low Quartile Distribution Uniformity
High Quartile Distribution Uniformity
Application Rate from Water Meter (mm/hour)
Application Rate from collectors (mm/hour)

13.8
23.6
0.42
0.53
22.1
29.9
22.3
38.9
0.75
1.30
32.5
55.5

Calculated from water meter data
Collector system flow is greater than water meter flow rate
Calculated from Run length and Run time
Test speed is greater than reported average spe
Measured applied depth is greater than water meter indicates
Uniformity is adequate - performance could still be improved
Uniformity is adequate - performance could still be im
Measured application rate is greater than water meter indicates

Water and Energy Use

Power cost (\$/kWh)
Calculated Pump energy use (kWh/h)
Energy efficiency (kWh/mm/ha)
Energy cost (\$/mm/ha)
Energy cost per irrigation (\$/ha)

0.12
27.0
19.6
2.35
51.84

Nutrient Application

N Nitrogen applied (kg/ha)
P Phosphorous applied (kg/ha)
K Potassium applied (kg/ha)

High Quartile

Mean
120
0
108

156
0
140

One eighth of the field
receives more than the
High Quartile application

Depth of Irrigation Applied after Accounting for Overlapping

