



Irrigation Design Australia

IDA Pty Ltd ACN: 624 560 747

ABN: 71 624 560 747

Postal address: P.O. Box 496, KALLANGUR, QUEENSLAND, 4503

Rick Freeman Phone: - 0410 594 460 Email: rick@irrigationdesignaustralia.com.au

Web: www.irrigationdesignaustralia.com.au

IRRIGATION WATER USAGE, CATCHMENT & IRRIGATION STRATEGY

47 Primrose Street 11.08.2026

Please see below the Irrigation Design / Strategy Information. We have provided the report based on the information provided. The methods of calculating water usage, and irrigation sustainability we have provided are based on this information. Calculations have been carried out based on landscaped areas supplied to IDA. **Irrigation applications will be by sub surface Drip.**

We have utilised two methods of calculating water usage. Using a mathematical method of multiplying the landscaped area by the nominated required volumes.

Method A used is as per Brisbane City Council requirements, BCC has recently advised that their preferred allowance is 30-35mm per week for Native Planting & 35-45mm per week for Exotic Planting

Method B used is as per average Industry standard applications these rates are:

Summer 25mm per week, Autumn 15mm per week, Winter 10mm per week, Spring 20mm per week. Seasonal Calculations have been based on 13 weeks.

PROVIDED DATA

Containerised Planting Area – 419m², Catchment Area – 847m²

IRRIGATION WATER USAGE – Method A – BCC requirements

BCC Volume required Lower Range is 30mm per week. – 12,570 Litres per week.

Total Annual Water Usage 653,640 Litres

BCC Volume required Median Range is 35mm per week. – 14,665 Litres per week.

Total Annual Water Usage 762,580 Litres

BCC Volume required Upper Range is 45mm per week. – 18,855 Litres per week.

Total Annual Water Usage 980,460 Litres

IRRIGATION WATER USAGE – Method B – Industry Standards

Application rates based on industry averages x area.

SUMMER 25mm per week = 10,475 Litres – Season requirement 136,175 Litres

AUTUMN 15mm per week = 6,285 Litres – Season requirement 81,705 Litres

WINTER 10mm per week = 4,190 Litres – Season requirement 54,470 Litres

SPRING 20mm per week = 8,380 Litres – Season requirement 108,940 Litres

Total Annual Water Usage 381,290 Litres

IRRIGATION WATER CAPTURE AND STORAGE:

South-East Queensland's climate is volatile. There are no sureties as to the volume of rainfall that will fall in a season. We have utilised the available historical BOM data to try to forecast potential issues and the figures below depict possible water catchment for comparison to irrigation requirements.

RAINFALL AND CATCHMENT CALCULATIONS ANNUAL AVERAGE:

Using a mathematical method of multiplying the Average Annual Rainfall provided by the Bureau of Meteorology by the supplied catchment area.

Rainfall minus 24mm per year to cover inefficiencies.

Catchment adjusted to 80% to cover inefficiencies.

CATCHMENT: AREA 847m² (Adjusted by 80% 678m²)

BRISBANE AVERAGE ANNUAL RAINFALL 1200mm (Adjusted by 24mm annually 1176mm)

1176mm per Year x a Catchment area of 678m² equals a catchment volume of **796,858 Litres**.

RAINFALL AND CATCHMENT CALCULATIONS SEASONAL:

Using a mathematical method of multiplying the **seasonal** rainfall provided by the Bureau of Meteorology by the supplied catchment area.

SUMMER rainfall seasonal average 678m² = Capture of 240,412 Litres

AUTUMN rainfall seasonal average 678m² = Capture of 169,332 Litres

WINTER rainfall seasonal average 678m² = Capture of 74,129 Litres

SPRING rainfall seasonal average 678m² = Capture of 122,239 Litres

Utilising this method Total Annual Catchment from Seasonal figures is **606,113 Litres**.

Regardless of the calculation method as the catchment area far outweighs the size of the Landscaped area should average rainfall occur then there will be an excess of Harvested water available for irrigation.

CATCHMENT v IRRIGATION REQUIREMENT SUMMARY:

Allowing that average rainfall is received then the annual data is as follows:

Annual catchment figures based on BOM data is **606,113 Litres**.

Annual Irrigation requirements BCC Lower Range is **653,640 Litres**

Giving us a shortfall of Harvested water of 47,527 Litres.

Annual Irrigation requirements BCC Upper Range is **980,460 Litres**

Giving us a shortfall of Harvested water of 374,347 Litres.

Annual Irrigation requirements Industry Standard is **381,290 Litres**

Giving us an excess of Harvested water of 224,823 Litres.

TANK SIZING (WATER STORAGE):

Tank sizing requires consideration of potential harvest volumes as well as irrigation water requirements. The highest average rainfall in Brisbane is 37.6mm a week, therefore the highest volume of water that can potentially be harvested over the project catchment is **25,478 Litres** in a week. The suggestion is for 10,000 or 15,000 Litres of storage.

10,000 Litre Storage would hold enough water for:

Approximately 0.80 weekly applications of irrigation at the BCC Lower Range of 30mm
Approximately 0.68 weekly applications of irrigation at the BCC Median Range of 35mm
Approximately 0.53 weekly applications of irrigation at the BCC Upper Range of 45mm
Approximately 1.36 average weekly applications of irrigation at the Industry Standard application rate.
This size tank will require **14.8mm** of Rain over the nominated catchment area to fill the Tank.

15,000 Litre Storage would hold enough water for:

Approximately 1.19 weekly applications of irrigation at the BCC Lower Range of 30mm
Approximately 1.02 weekly applications of irrigation at the BCC Median Range of 35mm
Approximately 0.80 weekly applications of irrigation at the BCC Upper Range of 45mm
Approximately 2.05 average weekly applications of irrigation at the Industry Standard application rate.
This size tank will require **22mm** of Rain over the nominated catchment area to fill the Tank.

ALTERNATE WATER SUPPLY

In periods of low rainfall or when tank levels are below requirements an alternative water supply may be required. The discrepancy between potential harvested catchment and water requirements will be met by alternative water when required. To service irrigation requirements the Tank may require multiple top ups, this should be considered when locating the Tanks as refill from Tanker at Ground Level may be an issue if the Water Tanker pumps do not have sufficient pressure to pump to high level Tank storage. Currently water for irrigation is available for approximately \$350 for a 13,500-litre tanker delivered. This could be utilised for tank fill if / when rainfall is not available. The locating of the tanks in an accessible location on the property will assist with access for Tanker fill. Alternatively, a fill line could be installed with an external connection point for a tanker to fill from.

Potable back up could be utilized (if required) at a 10-25% Tank level. This would safeguard the system should there be an issue with the alternative supply or nil rainfall in periods of demand.

SUMMARY

Allowing that “Average Rainfall” occurs then 15,000 litres of storage would hold each season’s highest catchment volumes, and the Irrigation requirements based on industry standards and the 30mm, 35mm requirements of BCC. Shortfalls can be addressed by plant selection and or additional irrigation requiring external Tank fill to cover the shortfall. All planters will require free draining soil and very good drainage, if possible, this should be drained back to the storage Tank. Should plant demand be less than the applied volumes this would ensure water is not wasted.

Data Summary

Based on Annual Rainfall data from the BOM. The calculations indicate that the Harvested Water across the 4 seasons will provide the following:

Annual Catchment 606,113 Litres

Annual Ind. Standard Irrigation requirement – 381,290 Litres Catchment provides 159%.

Annual BCC 30mm requirement 653,640 Litres. Catchment provides 93%.

Annual BCC 35mm requirement 762,580 Litres. Catchment provides 79%.

Annual BCC 45mm requirement 980,460 Litres. Catchment provides 62%.

We trust this information, calculations and stated strategy meets requirements and assists with planning for the required project.

Regards

Rick Freeman

Irrigation Design Australia



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47 Primrose Street

CATCHMENT & IRRIGATION WATER USAGE

Containerised Planting Landscape Area (m2):

419

Catchment

847

Adjusted Catchment

678

WATER USAGE METHOD - BCC REQUIRED APPLICATIONS (30,35,45mm)

	Weekly Irrigation Application	Weekly Irrigation Requirements	Weeks in Season	Seasonal Irrigation Requirements	Weeks in Season	Annual Irrigation Requirements
419.00	mm	litres	qty	litres	qty	litres
BCC WEEKLY REQUIREMENT Lower Range (Natives)	30	12,570	13	163,410	52	653,640
BCC WEEKLY REQUIREMENT Upper Range (Natives) Lower Range (Exotics)	35	14,665	13	190,645	52	762,580
BCC WEEKLY REQUIREMENT Upper Range (Exotics)	45	18,855	13	245,115	52	980,460
				599,170		

WATER USAGE METHOD - INDUSTRY STANDARD APPLICATIONS (25,20,15,10mm)

SUMMER	25	10,475	13	136,175
AUTUMN	15	6,285	13	81,705
WINTER	10	4,190	13	54,470
SPRING	20	8,380	13	108,940
Average	18	7,333	52	381,290

CATCHMENT CALCULATION METHOD - BOM DATA ANNUAL RAINFALL

	AREA m2	Annual Rainfall mm	Cunliffe mm	Adjusted Annual m2	Catchment litres
ROOF CATCHMENT AREA	678	1200	24	1,176	796,858
ANNUAL CATCHMENT					796,858

CATCHMENT CALCULATION - BOM DATA SEASONAL RAINFALL

		BOM Data 2024				
		Average Monthly Rainfall	Average Weekly Rainfall	Average Weekly Catchment	Average Monthly Catchment	Season Totals
Month	Season	mm	mm	litres	litres	
December	Summer	107.00	24.16	16372	72,503	240,412
January		127.40	28.77	19493	86,326	
February		120.40	27.19	18422	81,583	
March	Autumn	124.40	28.09	19034	84,293	169,332
April		53.20	12.01	8140	36,048	
May		72.30	16.33	11062	48,990	
June	Winter	35.60	8.04	5447	24,123	74,129
July		40.00	9.03	6120	27,104	
August		33.80	7.63	5172	22,903	
September	Spring	33.00	7.45	5049	22,361	122,239
October		73.50	16.60	11246	49,804	
November		73.90	16.69	11307	50,075	
ANNUAL TOTAL						606,113

		Weeks Harvest	
Highest Average Rainfall (BOM Data)		37.60	25.478

AVERAGES

IRRIGATION REQUIREMENT 30mm

CATCHMENT

% provide by Rainfall

DIFFERENCE

Annually	Summer	Autumn	Winter	Spring
653,640	163,410	163,410	163,410	163,410
606,113	240,412	169,332	74,129	122,239
93%	147%	104%	45%	75%
-47,527	77,002	5,922	-89,281	-41,171

IRRIGATION REQUIREMENT 35mm

CATCHMENT SEASONAL

% provide by Rainfall

DIFFERENCE

762,580	190,645	190,645	190,645	190,645
606,113	240,412	169,332	74,129	122,239
79%	126%	89%	39%	64%
-156,467	49,767	-21,313	-116,516	-68,406

IRRIGATION REQUIREMENT 45mm

CATCHMENT SEASONAL

% provide by Rainfall

DIFFERENCE

980,460	245,115	245,115	245,115	245,115
606,113	240,412	169,332	74,129	122,239
62%	98%	69%	30%	50%
-374,347	-4,703	-75,783	-170,986	-122,876

METHOD B

IRRIGATION REQUIREMENT (Industry Standards)

CATCHMENT SEASONAL

% provide by Rainfall

DIFFERENCE

381,290.0	136,175	81,705	54,470	108,940
606,113	240,412	169,332	74,129	122,239
159%	177%	207%	136%	112%
224,823	104,237	87,627	19,659	13,299

Tank Sizing

STORAGE

APPLICATIONS OF IRRIGATION BCC Lower Range

APPLICATIONS OF IRRIGATION BCC 35mm

APPLICATIONS OF IRRIGATION BCC Upper Range

Applications of Industry Standard - Summer

Applications of Industry Standard - Autumn

Applications of Industry Standard - Winter

Applications of Industry Standard - Spring

Applications of Industry Standard - Average 18mm

Tank holds mm over total area of 1514m2

mm OF RAIN TO FILL TANK

Average Weekly

Application	TANK SIZE	TANK SIZE	TANK SIZE	TANK SIZE
	2,500	5,000	10,000	15,000
12,570	0.20	0.40	0.80	1.19
14,665	0.17	0.34	0.68	1.02
18,855	0.13	0.27	0.53	0.80
10,475	0.24	0.48	0.95	1.43
6,285	0.40	0.80	1.59	2.39
4,190	0.60	1.19	2.39	3.58
8,380	0.30	0.60	1.19	1.79
7,333	0.34	0.68	1.36	2.05
mm	6.0	11.9	23.9	35.8
mm	3.7	7.4	14.8	22.1

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Irrigation Design Australia RAINFALL/ E.TR./ IRRIGATION SUMMARY BASED ON MEDIAN RAINFALL DATA FROM BOM.

47 Primrose Street

REGIONAL AREA: Brisbane

INDUSTRY STANDARDS FOR APPLICATION

Landscape Area (m2): **419** Total Catchment Area: (m2) **847** Adjusted Catchment Area: (m2-80%) **678**

Irrigation Application Rates for

Irrigation Application Rates for
Seasons after estab. (mm) **Industry
Standards**

SUMMER	AUTUMN	WINTER	SPRING
25.0	15.0	10.0	20.0

Statistic Element	December	January	February	March	April	May	June	July	August	September	October	November
Rainfall (Median 1994-2022)												
Monthly (mm) [Data from BOM]	121.30	123.80	161.60	120.20	71.20	100.90	64.20	31.20	34.40	32.20	82.40	94.10
Weekly (mm)	30.33	30.95	40.40	30.05	17.80	25.23	16.05	7.80	8.60	8.05	20.60	23.53
Seasonal Average (mm)	33.89			24.36			10.82			17.39		
Potential Catchment for defined roof area, less other usages i.e. Toilet flushing												
Monthly Rainfall Catchment (L)	82,193	83,887	109,500	81,448	48,245	68,370	43,502	21,141	23,309	21,819	55,834	63,762
Weekly Rainfall Catchment (L)	20,548	20,972	27,375	20,362	12,061	17,092	10,875	5,285	5,827	5,455	13,959	15,941
Season Average (L)	22964.99			16505.21			7329.37			11784.59		
Average Weekly Rainfall Catchment (L)		14,646										
Evapotranspiration (Median 2000-2019)												
Monthly (mm)	204.40	201.60	193.20	162.40	128.80	98.00	81.20	89.60	114.80	151.20	179.20	196.00
Weekly (mm)	51.10	50.40	48.30	40.60	32.20	24.50	20.30	22.40	28.70	37.80	44.80	49.00
Daily (mm) [Data from BOM]	7.30	7.20	6.90	5.80	4.60	3.50	2.90	3.20	4.10	5.40	6.40	7.00
Seasonal Average (mm)	7.13			4.63			3.40			6.27		
Adjusted Irrigation Appl. Rate comparing ETvsRainfall - VE indicates irrigation IS required + VE indicates irrigation NOT required												
Adjusted Monthly ETvsRain (mm)	-83.10	-77.80	-31.60	-42.20	-57.60	2.90	-17.00	-58.40	-80.40	-119.00	-96.80	-101.90
Adjusted Weekly ETvsRain (mm)	-20.78	-19.45	-7.90	-10.55	-14.40	0.73	-4.25	-14.60	-20.10	-29.75	-24.20	-25.48
Irrigation Required 1=Yes 0=No	1	1	1	1	1	0	1	1	1	1	1	1
Irrigation Supplement												
Weekly Irrigation Required (L)	-8,705	-8,150	-3,310	-4,420	-6,034	0	-1,781	-6,117	-8,422	-12,465	-10,140	-10,674

Irrigation for 1 wk during Summer (during no rain) (L)	10,475
Irrigation for 1 wk during Autumn (during no rain) (L)	6,285
Irrigation for 1 wk during Winter (during no rain) (L)	4,190
Irrigation for 1 wk during Spring (during no rain) (L)	8,380

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Irrigation Design Australia RAINFALL/ E.TR./ IRRIGATION SUMMARY BASED ON MEDIAN RAINFALL DATA FROM BOM.

47 Primrose Street

REGIONAL AREA: Brisbane

BCC 30mm WEEKLY APPLICATION

Landscape Area (m2): **419** Total Catchment Area: (m2) **847** Adjusted Catchment Area: (m2-80%) **678**

Irrigation Application Rates for

Irrigation Application Rates for
Seasons after estab. (mm) **BCC Lower**
Range

SUMMER	AUTUMN	WINTER	SPRING
30.0	30.0	30.0	30.0

Statistic Element	December	January	February	March	April	May	June	July	August	September	October	November
Rainfall (Median 1994-2022)												
Monthly (mm) [Data from BOM]	121.30	123.80	161.60	120.20	71.20	100.90	64.20	31.20	34.40	32.20	82.40	94.10
Weekly (mm)	30.33	30.95	40.40	30.05	17.80	25.23	16.05	7.80	8.60	8.05	20.60	23.53
Seasonal Average (mm)	33.89			24.36			10.82			17.39		
Potential Catchment for defined roof area, less other usages i.e. Toilet flushing												
Monthly Rainfall Catchment (L)	82,193	83,887	109,500	81,448	48,245	68,370	43,502	21,141	23,309	21,819	55,834	63,762
Weekly Rainfall Catchment (L)	20,548	20,972	27,375	20,362	12,061	17,092	10,875	5,285	5,827	5,455	13,959	15,941
Season Average (L)	22964.99			16505.21			7329.37			11784.59		
Average Weekly Rainfall Catchment (L)		14,646										
Evapotranspiration (Median 2000-2019)												
Monthly (mm)	204.40	201.60	193.20	162.40	128.80	98.00	81.20	89.60	114.80	151.20	179.20	196.00
Weekly (mm)	51.10	50.40	48.30	40.60	32.20	24.50	20.30	22.40	28.70	37.80	44.80	49.00
Daily (mm) [Data from BOM]	7.30	7.20	6.90	5.80	4.60	3.50	2.90	3.20	4.10	5.40	6.40	7.00
Seasonal Average (mm)	7.13			4.63			3.40			6.27		
Adjusted Irrigation Appl. Rate comparing ETvsRainfall - VE indicates irrigation IS required + VE indicates irrigation NOT required												
Adjusted Monthly ETvsRain (mm)	-83.10	-77.80	-31.60	-42.20	-57.60	2.90	-17.00	-58.40	-80.40	-119.00	-96.80	-101.90
Adjusted Weekly ETvsRain (mm)	-20.78	-19.45	-7.90	-10.55	-14.40	0.73	-4.25	-14.60	-20.10	-29.75	-24.20	-25.48
Irrigation Required 1=Yes 0=No	1	1	1	1	1	0	1	1	1	1	1	1
Irrigation Supplement												
Weekly Irrigation Required (L)	-8,705	-8,150	-3,310	-4,420	-6,034	0	-1,781	-6,117	-8,422	-12,465	-10,140	-10,674

Irrigation for 1 wk during Summer (during no rain) (L)	12,570
Irrigation for 1 wk during Autumn (during no rain) (L)	12,570
Irrigation for 1 wk during Winter (during no rain) (L)	12,570
Irrigation for 1 wk during Spring (during no rain) (L)	12,570

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47 Primrose Street

REGIONAL AREA: Brisbane

BCC 35mm WEEKLY APPLICATION

Landscape Area (m2): **419** Total Catchment Area: (m2) **847** Adjusted Catchment Area: (m2-80%) **678**

Irrigation Application Rates for

Irrigation Application Rates for
Seasons after estab. (mm) **BCC Lower
Range**

SUMMER	AUTUMN	WINTER	SPRING
35.0	35.0	35.0	35.0

Statistic Element	December	January	February	March	April	May	June	July	August	September	October	November
Rainfall (Median 1994-2022)												
Monthly (mm) [Data from BOM]	121.30	123.80	161.60	120.20	71.20	100.90	64.20	31.20	34.40	32.20	82.40	94.10
Weekly (mm)	30.33	30.95	40.40	30.05	17.80	25.23	16.05	7.80	8.60	8.05	20.60	23.53
Seasonal Average (mm)	33.89			24.36			10.82			17.39		
Potential Catchment for defined roof area, less other usages i.e. Toilet flushing												
Monthly Rainfall Catchment (L)	82,193	83,887	109,500	81,448	48,245	68,370	43,502	21,141	23,309	21,819	55,834	63,762
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Evapotranspiration (Median 2000-2019)												
Monthly (mm)	204.40	201.60	193.20	162.40	128.80	98.00	81.20	89.60	114.80	151.20	179.20	196.00
Weekly (mm)	51.10	50.40	48.30	40.60	32.20	24.50	20.30	22.40	28.70	37.80	44.80	49.00
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Irrigation Required 1=Yes 0=No	1	1	1	1	1	0	1	1	1	1	1	1
Irrigation Supplement												
Weekly Irrigation Required (L)	-8,705	-8,150	-3,310	-4,420	-6,034	0	-1,781	-6,117	-8,422	-12,465	-10,140	-10,674

Irrigation for 1 wk during Summer (during no rain) (L)	14,665
Irrigation for 1 wk during Autumn (during no rain) (L)	14,665
Irrigation for 1 wk during Winter (during no rain) (L)	14,665
Irrigation for 1 wk during Spring (during no rain) (L)	14,665

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Irrigation Design Australia RAINFALL/ E.TR./ IRRIGATION SUMMARY BASED ON MEDIAN RAINFALL DATA FROM BOM.

47 Primrose Street

REGIONAL AREA: Brisbane

BCC 45mm WEEKLY APPLICATION

Landscape Area (m2): **419** Total Catchment Area: (m2) **847** Adjusted Catchment Area: (m2-80%) **678**

Irrigation Application Rates for

Irrigation Application Rates for
Seasons after estab. (mm) **BCC Upper
Range**

SUMMER	AUTUMN	WINTER	SPRING
45.0	45.0	45.0	45.0

Statistic Element	December	January	February	March	April	May	June	July	August	September	October	November
Rainfall (Median 1994-2022)												
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Potential Catchment for defined roof area, less other usages i.e. Toilet flushing												
Monthly Rainfall Catchment (L)	82,193	83,887	109,500	81,448	48,245	68,370	43,502	21,141	23,309	21,819	55,834	63,762
Weekly Rainfall Catchment (L)	20,548	20,972	27,375	20,362	12,061	17,092	10,875	5,285	5,827	5,455	13,959	15,941
Season Average (L)	22964.99			16505.21			7329.37			11784.59		
Average Weekly Rainfall Catchment (L)		14,646										
Evapotranspiration (Median 2000-2019)												
Monthly (mm)	204.40	201.60	193.20	162.40	128.80	98.00	81.20	89.60	114.80	151.20	179.20	196.00
Weekly (mm)	51.10	50.40	48.30	40.60	32.20	24.50	20.30	22.40	28.70	37.80	44.80	49.00
Daily (mm) [Data from BOM]	7.30	7.20	6.90	5.80	4.60	3.50	2.90	3.20	4.10	5.40	6.40	7.00
Seasonal Average (mm)	7.13			4.63			3.40			6.27		
Adjusted Irrigation Appl. Rate comparing ETvsRainfall - VE indicates irrigation IS required + VE indicates igation NOT required												
Adjusted Monthly ETvsRain (mm)	-83.10	-77.80	-31.60	-42.20	-57.60	2.90	-17.00	-58.40	-80.40	-119.00	-96.80	-101.90
Adjusted Weekly ETvsRain (mm)	-20.78	-19.45	-7.90	-10.55	-14.40	0.73	-4.25	-14.60	-20.10	-29.75	-24.20	-25.48
Irrigation Required 1=Yes 0=No	1	1	1	1	1	0	1	1	1	1	1	1
Irrigation Supplement												
Weekly Irrigation Required (L)	-8,705	-8,150	-3,310	-4,420	-6,034	0	-1,781	-6,117	-8,422	-12,465	-10,140	-10,674

Irrigation for 1 wk during Summer (during no rain) (L)	18,855
Irrigation for 1 wk during Autumn (during no rain) (L)	18,855
Irrigation for 1 wk during Winter (during no rain) (L)	18,855
Irrigation for 1 wk during Spring (during no rain) (L)	18,855