

Rainfall Effects on Seasonal Weekly Irrigation Schedules- A Case Study of the Water My Yard Program

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Abstract

Proper accounting of rainfall is necessary when calculating weekly irrigation requirements. Rainfall can either reduce the amount of irrigation required or eliminate the need completely. The Water My Yard program was started in 2015 as a simple tool to provide guidance to homeowners on whether irrigation is required each week and if so how many minutes to run their irrigation systems. A review of weekly water recommendations of service areas in the Water My Yard Program in Texas has shown that as often as 50% of the seasonal weekly recommendations issued no watering required as a direct result of sufficient rainfall having been received. This paper will evaluate and compare the weekly watering recommendations of service areas within the water my yard program as a direct result of using localized measured rainfall.

Background

The Water My Yard program and website (<http://WaterMyYard.org>) was developed using simple, intuitive images and information prompts for homeowners to receive recommendations on how long (in minutes) to run their irrigation systems. The program was launched in May 2013 as a joint effort of the Irrigation Technology Program of the Texas A&M Agrilife Extension Service (Extension) and the North Texas Municipal Water District (NTMWD). To support the program, NTMWD purchased and installed 8 scientific (ET Type) weather stations within their member cities service area. Density of weather stations and accuracy of weekly watering recommendations has been a concern to promote homeowner confidence in following the program.

Watering Recommendations

To help address questions on variability between weather station density and weekly watering recommendation, an analysis of weekly watering recommendations from the WaterMyYard Program for the North Texas Municipal District service area for the typical irrigation seasons in 2016 and 2017, respectively. The number of weeks that irrigation was recommended and not recommended was quantified from each weather station in the service area. Additionally the total amount of irrigation required and the total rainfall received was calculated. A summary of each year's analysis is shown in Table 1.

Table 1. Summary of Watering Recommendations for the North Texas Municipal Water District from 2016 and 2017.

	2016				2017			
	Irrigation Recommended (Weeks)	No Watering Needed (Weeks)	Total Irrigation (Inches)	Total Rainfall (Inches)	Irrigation Recommended (Weeks)	No Watering Needed (Weeks)	Total Irrigation (Inches)	Total Rainfall (Inches)
Farmersville	18	21	6.69	35.24	18	12	5.27	20.09
Garland	21	18	7.21	29.92	18	12	8.21	20.98
Mckinney	17	22	7.19	31.04	19	11	7.2	21.01
Mesquite	19	20	7.61	32.22	14	16	6.57	50.57
Plano	18	21	6.29	35.47	17	13	6.22	38.74
Richardson	16	23	6.4	31.1	18	12	6.96	21.67
Rockwall	16	23	5.64	39.49	15	15	5.21	30.48
Wylie	24	15	8.09	30.07	19	11	6.86	22.19

Figure 1. 2016 North Texas WaterMyYard Summary

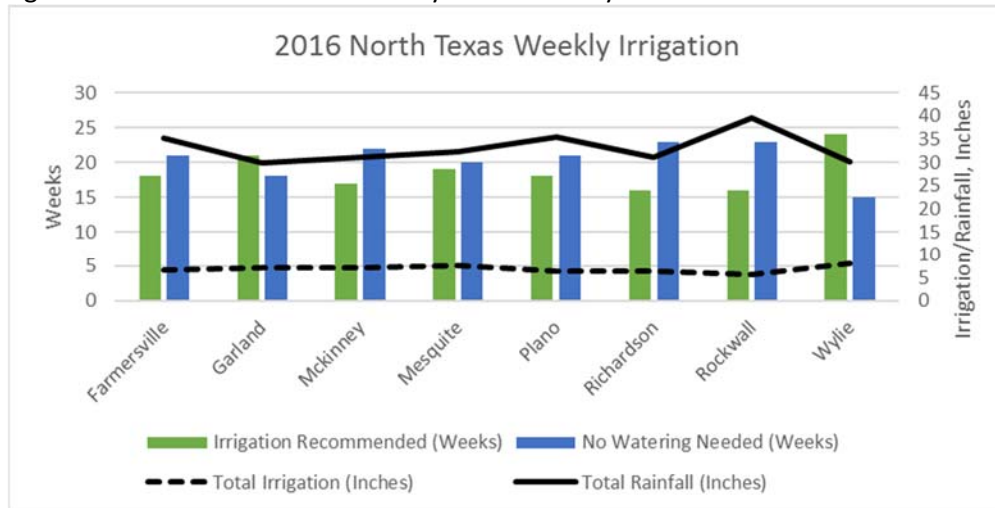


Figure 2. 2017 North Texas WaterMyYard Summary

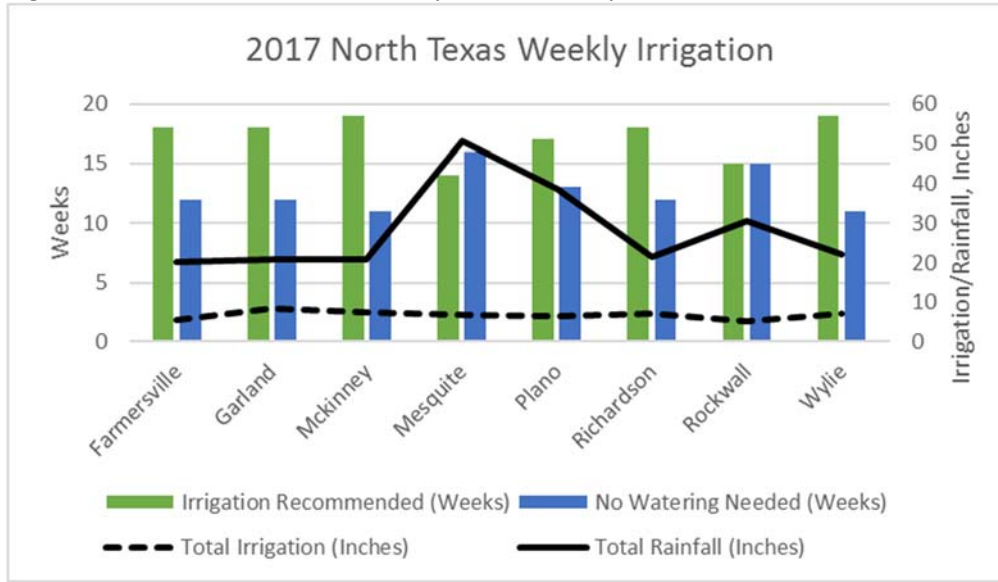


Figure 3

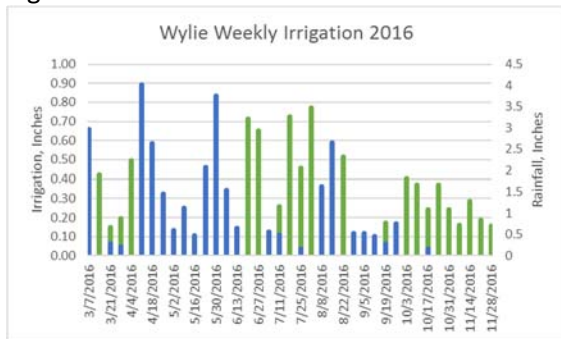


Figure 4

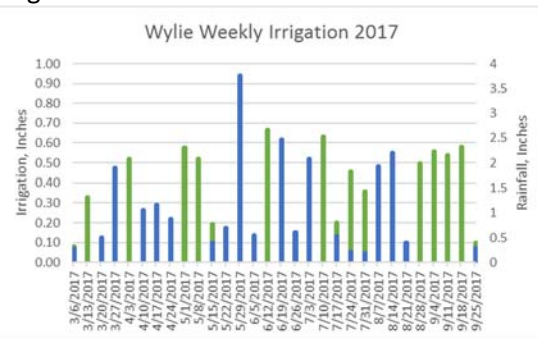


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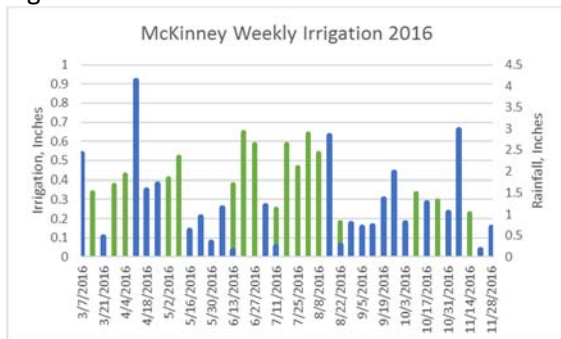


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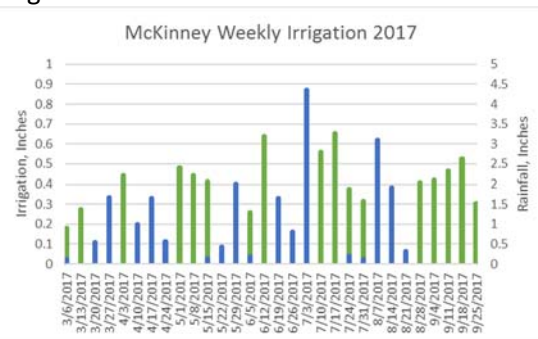


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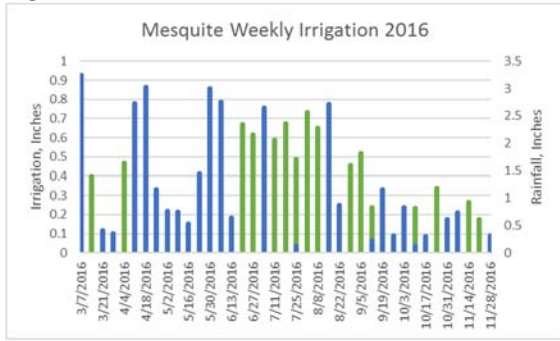


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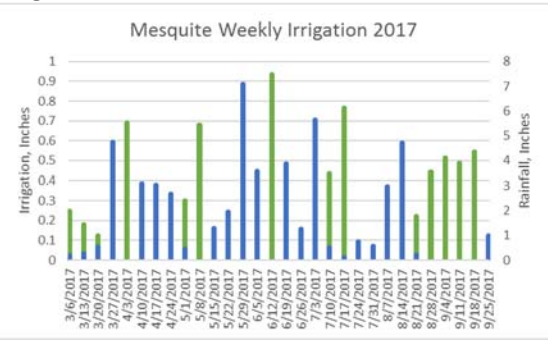


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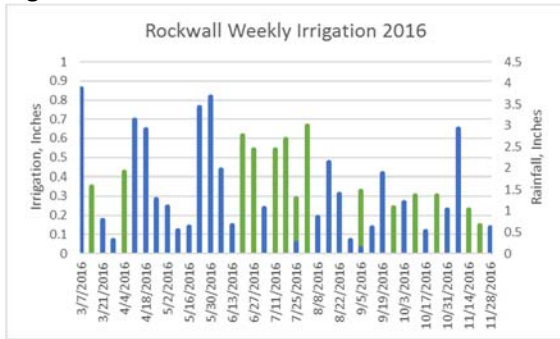


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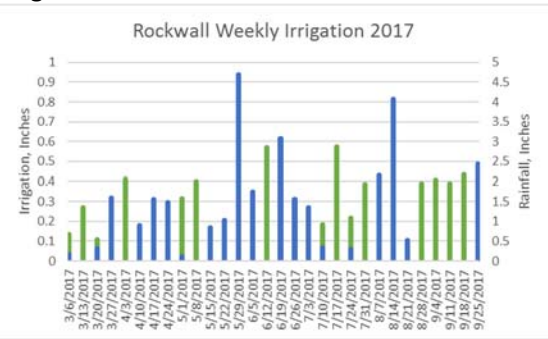


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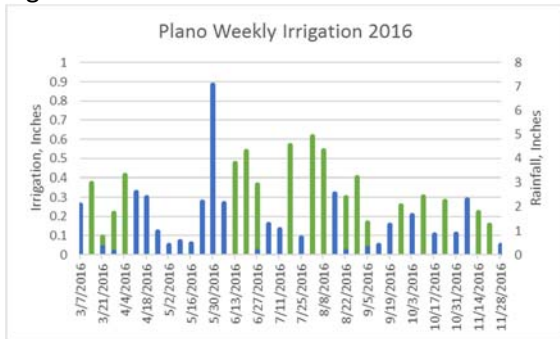


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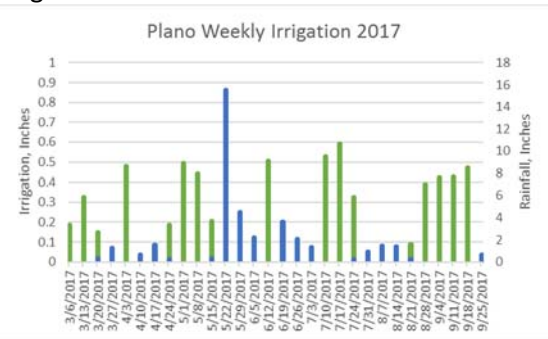


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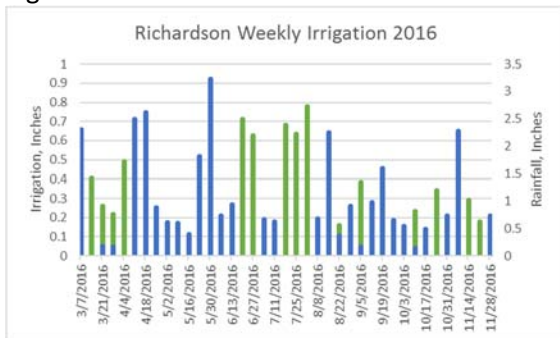


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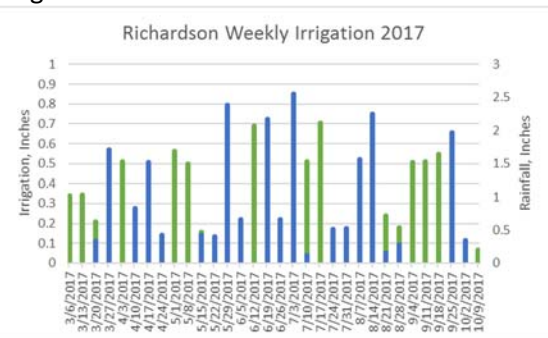


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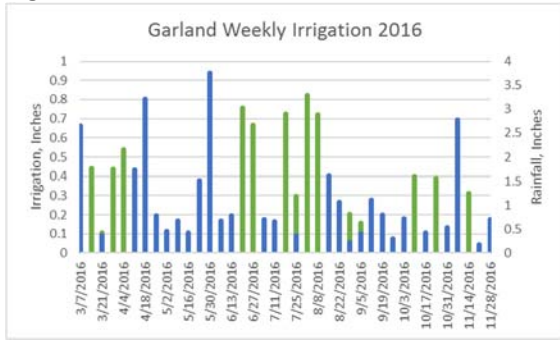


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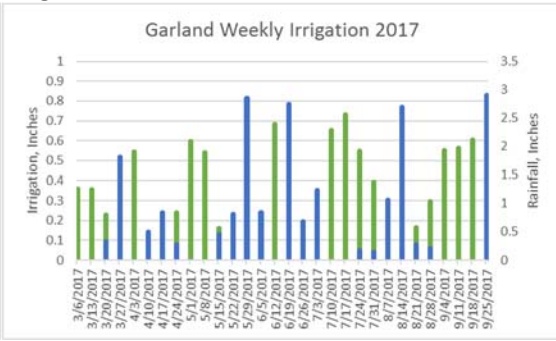


Figure 17

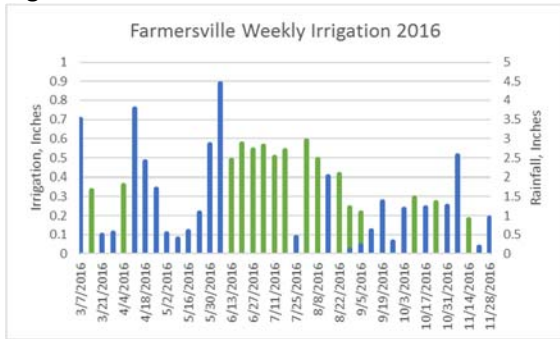
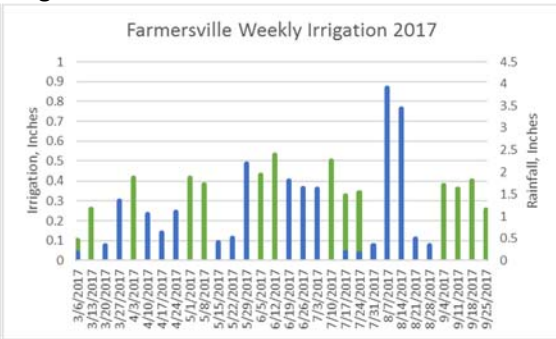


Figure 18



Summary

A summary of 39 weeks of watering recommendations from 2016 and 30 weeks in 2017 showed that no watering was required on average 52% of the period in 2016 and 42% of the period in 2017 due to rainfall. In 2016, the irrigation recommendations varied from 5.64-8.09 inches (Difference of 2.45 inches) however the total rainfall received varied from 29.92-39.49 inches (Difference of 9.57 inches). In the 2017 period, irrigation recommendations varied from 5.21-8.21 inches (Difference of 3 inches) while the total rainfall varied from 26.09-50.57 inches (Difference of 24.18 inches). Analysis shows that rainfall is more variable over the service area than the amount of irrigation recommended. Based on this analysis, it can be concluded that over time, the importance in adequate accounting for rainfall is just as significant as the amount of irrigation recommended within a service area.