Using Aggie Catch Cans

Charles Swanson and Guy Fipps
Extension Program Specialist and Professor & Extension Agricultural Engineer
Irrigation Technology Program - Texas AgriLife Extension Service

How much am I watering?

Knowing your irrigation sprinkler precipitation rate is the first step in reducing excess water use and improving plant quality. By knowing how fast your system is applying water, you can determine how long to run your system. Conducting irrigation catch can test or having an irrigation audit performed are the best ways to determine the precipitation rate of your irrigation system. Conducting a test is very simple with the "Aggie Catch Can." This device measures irrigation volumes in both milliliters (ml) and inches (in). The Aggie Catch Can is available through the AgriLife Extension Bookstore at http://AgrilifeBookstore.org (product SP-424).


Aggie Catch Can

To conduct an irrigation system test, follow one of three basic principles for Aggie Catch Can placement:

- Place catch cans in a grid like pattern within your sprinkler irrigation zone or irrigated area (Figure 1).
- For straight lines of sprinklers, place a can near and half way between each sprinkler, be careful not to put the cans too close to the sprinkler as the cans may be knocked out of their stands. (Figure 2)
- For "hosed end" sprinklers, place cans equally spaced in a straight line from the sprinkler to end where the last drop falls (Figure 3).

Once the catch cans are in place, run the irrigation sprinkler(s) until there is an easily readable volume. Common runtimes to use when conducting an irrigation system test are:

- Spray Heads: 5-10 minutes
- Rotor Heads: 10-15 minutes
- Hosed-End Sprinklers: 10-30 minutes

Record irrigation volumes and the test runtimes on the form below. Do not round up or down to the nearest minute, always record the exact time.

Example
10 minutes 30 seconds = 10.5 minutes
15 minutes 45 seconds = 15. 75 minutes

Figure 1. Catch Cans in Grid-Like Pattern

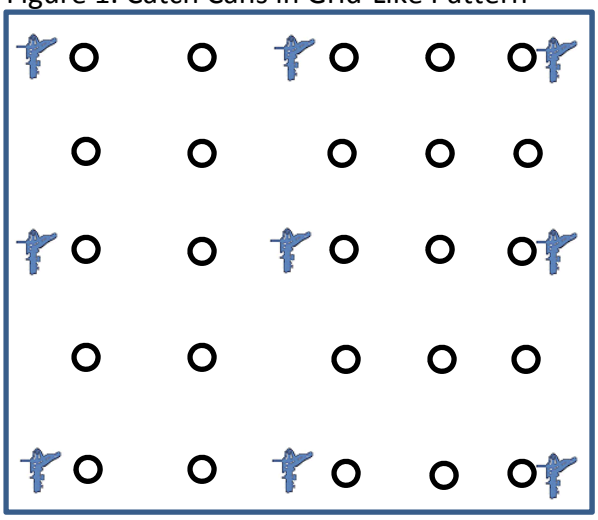


Figure 2. Catch Cans in Straight Line Setup

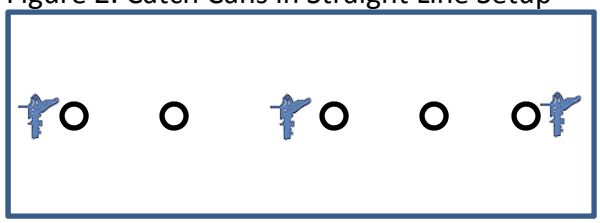
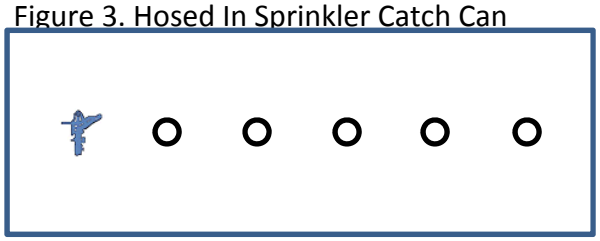


Figure 3. Hosed In Sprinkler Catch Can



Calculating Precipitation Rate Using Inches from the Aggie Catch Can

To calculate the precipitation rate, you add all the cans volumes and divide by the total number of catch cans used in the test. This will be the average volume. Next divide the average volume by the test runtime and multiply by 60. This will equal be the precipitation rate of the sprinklers in inches per hour (in/hr).

Step 1: Determine Average Can Volume

$$Average\ Can\ Volume = \frac{Sum\ of\ Cans\ Volume}{Total\ \#\ of\ Cans}$$

Step 2: Calculate the Precipitation Rate

$$PR\ (\frac{in}{hr}) = \frac{Average\ Can\ Volume, Inches}{Runtime, minutes} \times 60$$

<u>Example</u>

Five catch cans read the following amounts: .05”, .2”, .15”, .075” & .1” after 10 minutes

$$\text{Average Can Volume} = \frac{.05" + .2" + .15" + .075" + .1"}{5\ \text{Cans}} = .115"$$

$$PR = \frac{.115"}{10\ minutes} \times 60 = .69\frac{in}{hr}$$

Is my irrigation system operating correctly?

While conducting the catch can test, it is always a good idea to inspect the sprinklers to make sure there is no damage or water waste occurring. Many times, irrigations systems operate at night or in the early morning hours. This limits your ability to observe if any sprinklers are having problems. Common problems with irrigation systems are broken sprinklers, clogged nozzles and misaligned heads. Typically these can be easily fixed by replacing the sprinkler, cleaning the nozzle or adjusting the direction of spray. If multiple problems exist, you may have to contact an irrigation professional to conduct the repairs. Make sure that high grass or other vegetation doesn't block or deflect the irrigation pattern.

Broken Sprinkler

Clogged Nozzle

Misaligned Head

High Grass

How much water does my landscape need?

Irrigation schedules are based on "evapotranspiration" or "ET" for short. The term evapotranspiration includes all the water that is transpired from a plant and the amount of evaporation from the soil surface during the day. Typically, scientific weather stations and computers are needed to calculate ET on a daily basis; however there are various online resources available for you. The best resource in Texas is the TexasET Network and Website (http://TexasET.tamu.edu). Users of the TexasET Network can view daily ETo and weather data, as well as use the online calculators for calculating irrigation water requirements. Frequent users can also sign up for weekly irrigation recommendations for their landscape.

Catch Can Test Datasheet

PRELIMINARY DIAGNOSIS

Station #	Broken Sprinkler	Clogged Nozzle	Misaligned Head	High Grass	Plant Type	Comments
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

TEST RESULTS

Station #	1	2	3	4	5	6	7	8	9	10	11	12
Test Runtime (minutes)												
Catch Can Volumes (inches)												
TOTAL Volume												