


Mississippi Crop Situation

 mississippi-crops.com/2014/06/26/programming-a-surge-valve/

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We are having lots of questions concerning the proper set up of surge valves. First, please consider some of the basic terminology associated with furrow irrigation.

We encourage you to visit <http://www.youtube.com/watch?v=46sSLFBUrh8> and view the video before continuing.

Phases of Furrow Irrigation

1. Advance Cycle – The phase in which the dry furrow is wetted. This cycle creates multiple pluses down the field.
2. Out Time – The time required for water to reach the end of the furrow.
3. Soaking Cycle – The phase in which the required application depth is infiltrated. This is a single pulse, with each pulse reaching the tail ditch.
4. Soaking Time – The time it takes the required application depth to infiltrate.



The following are points to consider when setting up a surge valve:

If you have a silt loam or sandy soil that has a tendency to seal causing water infiltration to be an issue:

1. Determine the Out Time from past experience.
2. Set the Advance Cycle to $\frac{1}{2}$ of the Out Time + one hour. For example, if you have a field that has historically required 24 hours to get the water across and you now have this same field set up with a surge valve, the Advance Cycle would be set to 13 hours.
3. It is critical that the time required for water to actually reach the tail ditch be recorded. Any adjustments to the Advance Cycle of the surge valve need to be made before the Soaking Cycle begins. You made need to add or subtract time from the original settings of the Advance Cycle. If you miss this timing, adjustments can only be made after the completion of the Soaking Cycle.
4. The Soaking Time or completion time can be found on your PHAUCET printout. If PHAUCET requires 20 hours to apply 3 acre inches on each set, then the total system run time is 40 hours before you shut the system and well off. It is equally important to adjust the Soaking Time, if the single pulse is falling short of the tail ditch, time should be added, if the single pulse is putting water in the ditch, time should be subtracted.

If you have a cracking clay soil:

When programming the advance cycle of the Star controller for a clay soil types, producers need to refer to the Phaucet or Pipe Planner printout for the time required to apply 3 acre inches and set the advance cycle accordingly. For example, if the printout says that 22 hours are required to apply 3 acre inches, the advance cycle would be set for 22 hours. After setting the advance cycle time producers need to adjust the total number of cycles per side for the valve to complete. It is recommended to subtract two cycles from the value displayed on the controller, but never less than a total number of 3 cycles. Press the "custom" tab, lets say the controller displays 6 cycles per side, use the down arrow key to subtract 2 cycles from the number of cycles per side (#cycles/side). The display should display 6-2. (or 4 cycles per side) Never use less than 3 cycles per side, so if the controller displays 4 cycles per side, do not subtract the recommended two, use 4-1. (3 cycles per side) Please see example at bottom.

Surge Valve Star Controller Recommendations for Clay Soils

<u>It is recommended that the number of cycles per side equals the default setting minus two.</u>		
<u>The total cycles per side should never be less than three.</u>		
Advance Setting	Default Cycles/Side Setting	Custom Cycles/Side Recommendation
Input by user	Under Custom tab	use down arrow to adjust
5	4	4-1 (3) Total
10	5	5-2 (3) Total
15	6	6-2 (4) Total
20	6	6-2 (4) Total
30	6	6-2 (4) Total