



Drip Irrigation Systems: Common Problems and Fixes

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In winegrowing regions with insufficient rainfall, the importance of a well-functioning irrigation system cannot be overstated. Here are some of the most common problems found with drip irrigation systems in vineyards and some practical solutions.

PROBLEM #1:

Plugging of drip hoses and emitters. Solid materials that make their way into drip hoses can cause plugging of drip emitters.

SOLUTIONS:

1. **Choose the appropriate filter type** (media, tubular, disc, etc.) depending on the vineyard's water quality and flow requirements. For example, choose sand media tanks if water quality is poor and field flow requirements are high. Tubular screen filters work best with clean water and when frequently maintained. If sand is an issue consider adding a sand separator, which can remove 70-95% of dense particles before they reach the primary filter.

2. **Clean filters.** Have a maintenance routine for cleaning disc filters, washing tubular screens and/or replacing sand media at regular intervals. Install an automatic backflush system that cleans filter media on a schedule or based on pressure differentials.

3. **Treat irrigation water** at the pumping plant with sulfuric acid and/or chlorine through a continuous injection system to keep soluble materials in solution and prevent scaling. Treat agricultural reservoirs to limit algal growth.

4. **Flush drip hoses monthly** during the growing season and let hoses drain for longer durations. Adjust inlet pressures so that a flushing flow rate of 1-2 GPM is achieved at the end of a 0.625" ID hose for 5 to 10 minutes per line.

PROBLEM #2:

Leaks from hose ends, broken emitters and risers are a common source of water waste in drip/micro irrigation systems.

SOLUTION:

Have a system for identifying and repairing these types of problems. A common practice is to drive the perimeter and every other row of the irrigation set at startup and repair problems immediately. Irrigators must have the parts and tools they need with them in the field in order to make repairs immediately.



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PROBLEM #3:

Pressure problems. High pressure variability in an irrigation set leads to water and nutrients not being applied evenly over the field.

SOLUTIONS:

- 1. Large pressure losses at the pump should be eliminated.** This is wasted electricity and reduces the amount of pressure to work with in the field.
- 2. Make regular pressure observations.** In the field, adjust pressure regulating valves so that all valves in the set are the same inlet pressure. Install pressure regulators at risers, or directly in drip hoses to reduce high field pressures due to elevation changes.

Perform a simple Distribution Uniformity evaluation on a regular basis by checking flows and pressures at the pump and in the field to monitor system performance.



It is important to inspect all parts of the system regularly for wear and damage.



Drip emitter with calcium carbonate scale buildup, suggesting the emitter is plugging.

Problem #4:

Wear and tear. Keep in mind most aboveground components of a drip irrigation system are expected to have a lifetime of 5 to 10 years. So it is not surprising that things leak, break or otherwise fail from time to time.

SOLUTIONS:

- 1. Check on system components regularly** for wear and replace damaged and/or broken equipment.
- 2. Check pressure gauges at the pump station** at start up and at every irrigation event. Replace damaged equipment and pipes. Check air vents and clean them at beginning of season.
- 3. Consider replacing drip hoses and emitters** when performance is degraded by leaks, cracks and broken emitters.

PROBLEM #5:

Flying blind. Without knowing how an irrigation system is functioning it is impossible to make informed decisions about irrigation scheduling and maintenance priorities.

SOLUTION:

It is impossible to know how well an irrigation system is performing without data collected in a systematic way. **Perform a simple Distribution Uniformity evaluation on a regular basis** by checking flows and pressures at the pump and in the field to monitor system performance.

Reference: Drip and Micro Irrigation Design and Management for Trees, Vines and Field Crops. 5th Edition. 2016. ITRC.