Drip Tape Application Study
NOF and NBM

June 8, 2010

Background

Due to inquiries from AGGRAND Dealers and customers regarding the potential of clogging irrigation tape when AGGRAND product 4-3-3 and 0-12-0 are incorporated into the watering system, it was decided to evaluate an off-the-shelf product to determine if blockage of the orifices would occur.

A system designed for vegetable gardens was purchased from DIG Irrigation Products, www.digcorp.com, (Model ST100). The irrigation tape had drippers spaced in 12 inch increments being constructed of a polymeric injection molded filter that accentuated turbulent flow, this reducing clogging at the outlet. The system also came with a screen at the inlet which was removed.

4-3-3 Testing

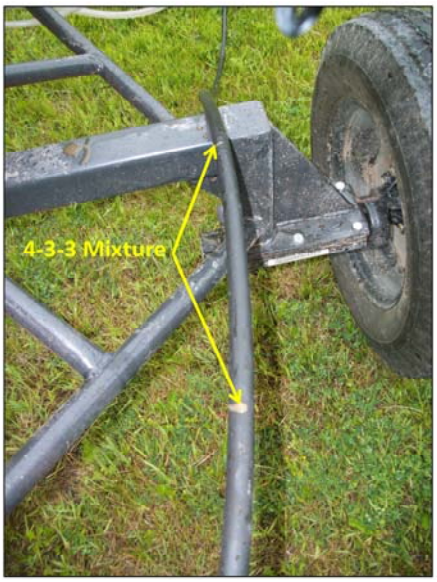
- A 5% solution of 4-3-3 and water was prepared in the AGGRAND tow behind sprayer
- 10 feet of irrigation tape and associated fittings were attached to the external spray outlet on the sprayer.
- The sprayer engine and associated pump were run several minutes to mix the 4-3-3 and water. The unit was also moved back and forth to facilitate mixing.
- The engine was set at ≈ 2400 RPM with system pressure at 25 psi and run for 30 minutes

4-3-3 Test Apparatus Set-up

4-3-3 Testing

- The system was allowed to run for 30 minutes
  - With no clogged drippers
  - Flow did not seem to be reduced during the test time at any orifice
  - System pressure remained at 25 psi during the entire test
- Total volume emitted ≈ 2 gallons

4-3-3 Testing: Tape Flow



4-3-3 Testing: Dripper/Tape Evaluation

- After the testing was complete, the 10 foot section of irrigation tape was cut open and evaluated for screen blinding in the drippers (using microscope), and residual fertilizer solids remaining in the tape.
- Conclusion: No residual solids were evident in the drippers or in the tape.

4-3-3 Testing: Dripper Evaluation

0-12-0 Testing

- A 5% solution of 0-12-0 and water was prepared in the AGGRAND tow behind sprayer
- 10 feet of irrigation tape and associated fittings were attached to the external spray outlet on the sprayer.
- The sprayer engine and associated pump were run several minutes to mix the 0-12-0 and water. The unit was also moved back and forth to facilitate mixing.
- The engine was set at ≈ 2400 RPM with system pressure at 30 psi and run for 30 minutes

0-12-0 Test Apparatus Set-up

0-12-0 Testing

- The system was allowed to run for 30 minutes
  - With no clogged drippers
  - Flow seemed to be reduced slightly in one dripper during the test time, all others appeared to flow well
  - System pressure increased to 35 psi during the test, indicating some restriction
- Total volume emitted ≈ 2 gallons

0-12-0 Testing: Tape Flow

0-12-0 Testing: Dripper/Tape Evaluation

- After the testing was complete, the 10 foot section of irrigation tape was cut open and evaluated for screen blinding in the drippers (using microscope), and residual bone meal solids remaining in the tape.
- Conclusion: Residual solids were found in the tape and at the associated dripper at 3 feet from the end of the tape.

0-12-0: Dripper/Tape Evaluation

Conclusions/Recommendation

The AGGRAND 4-3-3 product can be incorporated into irrigation water and delivered through drip irrigation systems with this and similar types of tapes without clogging. The 0-12-0 product did not clog the drippers, but the larger particle size bone meal accumulated in the tape, and over time would block the system.

When using AGGRAND products it is recommended the pre-filter screen to the irrigation system be removed, and after fertilizer application, the system be flushed with a small amount of water to remove residual amount of fertilizer and bone meal.

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