

The problem

Gelatinous masses of Nostoc, a cyanobacterium, on gravel and ground cloth in container nurseries are a slipping hazard for workers. Preliminary observations and research have demonstrated that most POST and PRE herbicides labeled for use in nurseries do not control Nostoc. Both copper hydroxide and copper ethanolamine have shown promise for curative suppression of nostoc (Neal et al., 2019). Also, in response to more common incidences of glyphosate-resistant weed populations, some growers have increased the use of glufosinate for general weed control. At one such site, we observed a decrease in nostoc populations, but no data are available on glufosinate efficacy on this cyanobacterium.



The objective

Compare the efficacy of glufosinate (Finale XL), copper hydroxide (Kalmor), and copper ethanolamine (Captain XTR).

Methods

An experiment was conducted at two sites to evaluate the efficacy of glufosinate (Finale XL) +/- surfactant for Nostoc control in gravel roadways of container nurseries. A separate experiment was conducted to compare the efficacies of copper ethanolamine (Captain XTR) and copper hydroxide (Kalmor). Test sites were gravel roadways at two container nurseries in central NC. Areas were selected for relatively uniform stands of nostoc.

- Biocides were applied twice at 21-day intervals
- 1st applications on July 21, 2021 (site 1); August 4, 2021 (Site 2)
- CO₂-pressurized sprayer; flat fan nozzles; Spray volume: 50 or 100 GPA (Kalmor)
- RCBD with 5 reps
- % cover & % control evaluated monthly

Results – Captain XTR and Kalmor efficacy (Figure 1)

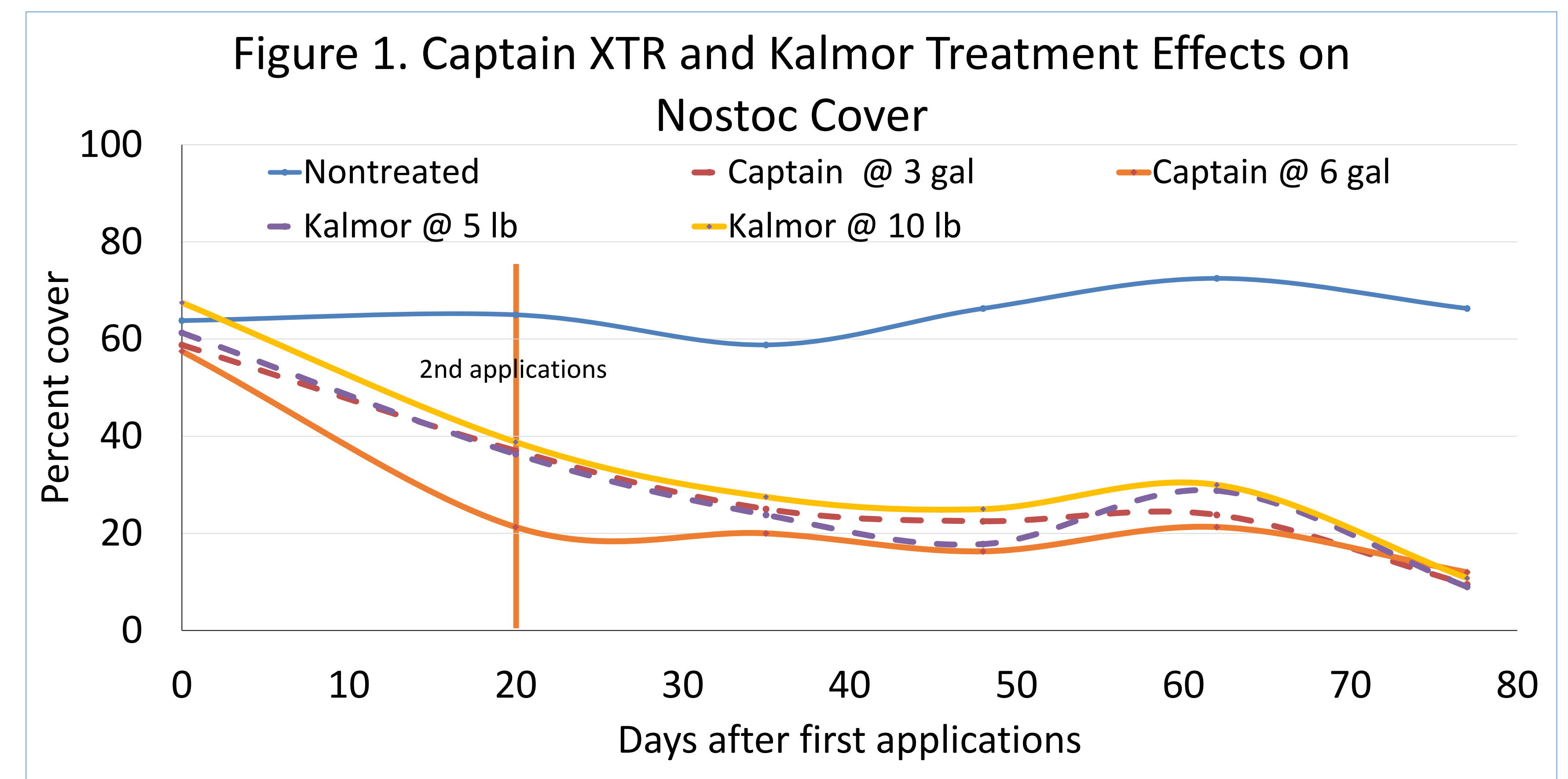
- 7 days after the 1st applications, some discoloration and reduction in nostoc cover was evident in all Kalmor and Captain XTR treatments
- 20 days after the 1st applications, all chemical treatments had reduced nostoc cover by > 50% compared to initial cover estimates
- 8 weeks after the 2nd applications, all Captain and Kalmor treatments had reduced nostoc cover to ≤ 12%



Kalmor

Nontreated

3 weeks after 1st application



Results – Finale XL (Figure 2)

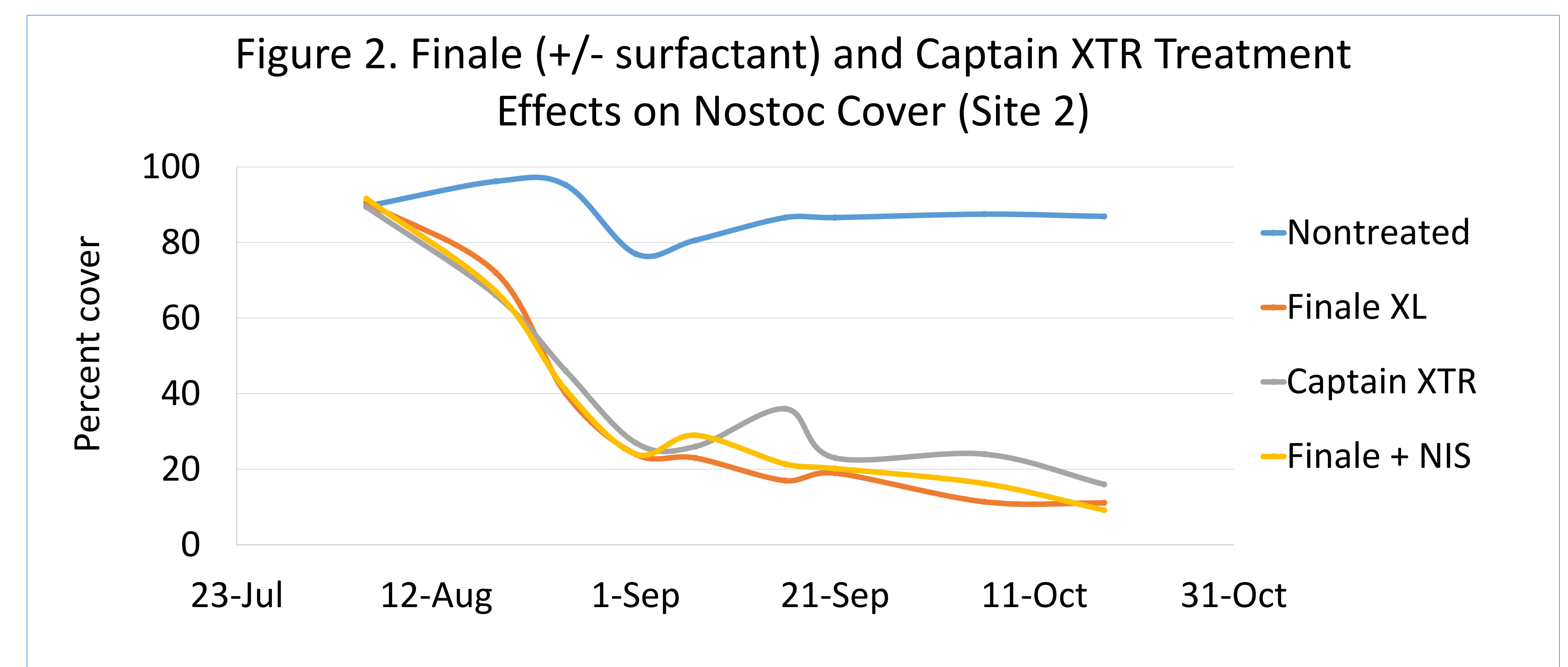
- Finale XL at 1.5 lb ai/A applied twice at 21-day intervals controlled nostoc, and was not significantly different from control achieved by Captain XTR at 3 gal/A.
- The addition of surfactant did not improve Finale efficacy, but did reduce foaming of the spray solution.

1 week after 2nd application



Finale XL

Nontreated



Conclusions:

- Finale XL (glufosinate) at 1.5 lb ai/A, Captain XTR at 3 to 6 gal/A, or Kalmor at 5 to 10 lb/A applied twice at ~21-day intervals controlled nostoc.