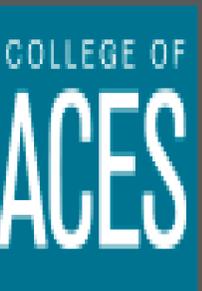




# Use of Tartrazine Dye to Measure Foliar Spray Deposition on Turfgrass



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## Introduction

Foliar spray applications allow effective and precise turf management and are widely used on golf courses and sports fields. An effective spray application can save money, reduce labor cost, and reduce environmental loss from over application. A number of researchers have studied crop response to various spray methods. However, a search of the literature did not find any studies evaluating spray deposition on turfgrass foliage. Quantifying foliar deposition will help turf managers make more efficient and optimally targeted applications of pesticides and fertilizers.

## Objectives

Evaluate the effect of  
1. Spray volume  
2. Nozzle types at different spray volumes  
3. Adjuvants at different spray volumes.  
On foliar retention of bentgrass (*Agrostis capillaris* L.) golf fairways.

## Materials & Methods

1. Turf cores mowed at 1.3 cm were collected from the U of I Landscape Horticulture Research Center.
2. Tartrazine was used as the tracer to measure foliar retention.
3. Plant materials were treated by Generation 3 research sprayer
4. Turfgrass foliage was collected and extracted 4X with distilled water for tracer measurement.
5. Spectrophotometric analysis at 425nm.

## Spray volumes

Figure 1. The correlation between spray volumes and recovery rates

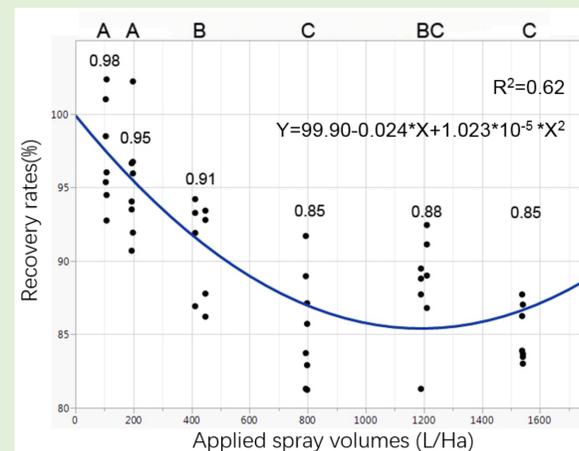
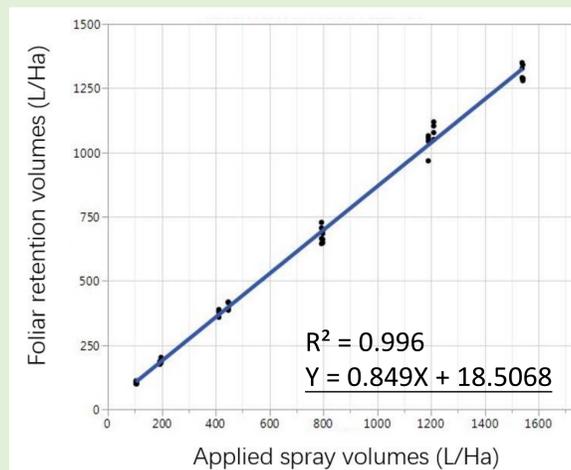


Figure 2. The correlation between spray volumes and foliar retention volumes



## Acknowledgement

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## Results

### Nozzle types & Spray volumes

Figure 3. The effect of nozzle types on foliar recovery rates

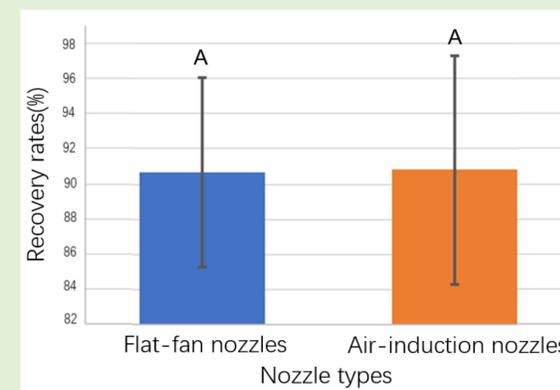
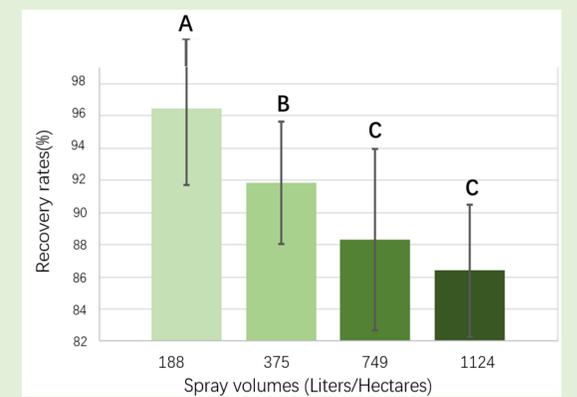
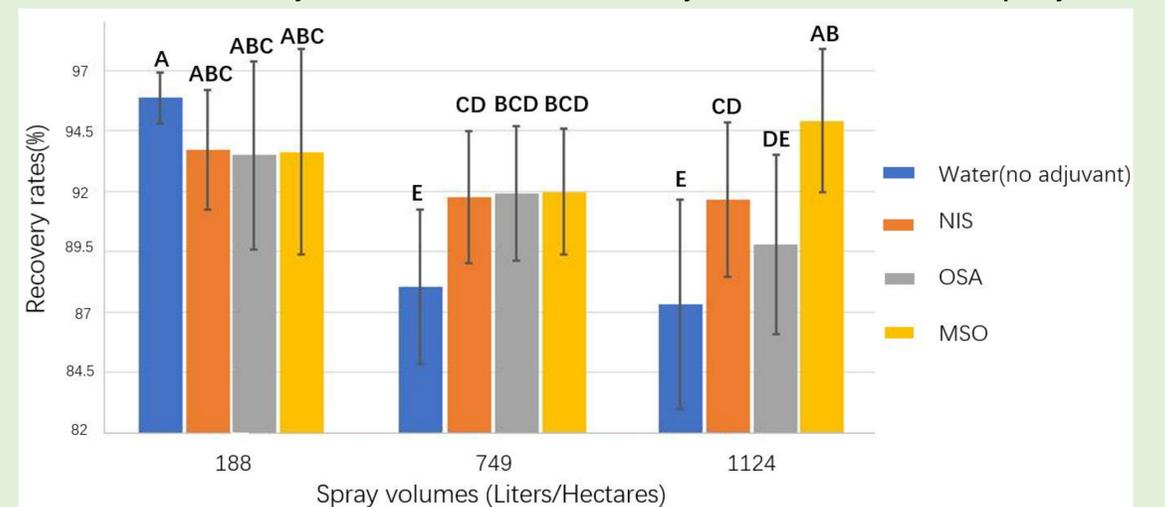


Figure 4. The effect of spray volumes on foliar recovery rates



### Adjuvants & Spray volumes

Figure 5. The effect of adjuvants on foliar recovery rates at different spray volumes



## Conclusions

1. Increasing spray volume reduces recovery rate that plateaus around 85%.
2. There is no difference between flat-fan nozzle and air-induction nozzle on foliar retention.
3. Adding adjuvants can increase foliar recovery rates at high spray volumes.
4. Increasing spray volume to target the thatch layer or root-zone is ineffective at commonly used spray volumes.