Strategies for Increased Yellow Nutsedge (*Cyperus esculentus* L.) Control With Halosulfuron and Sulfentrazone

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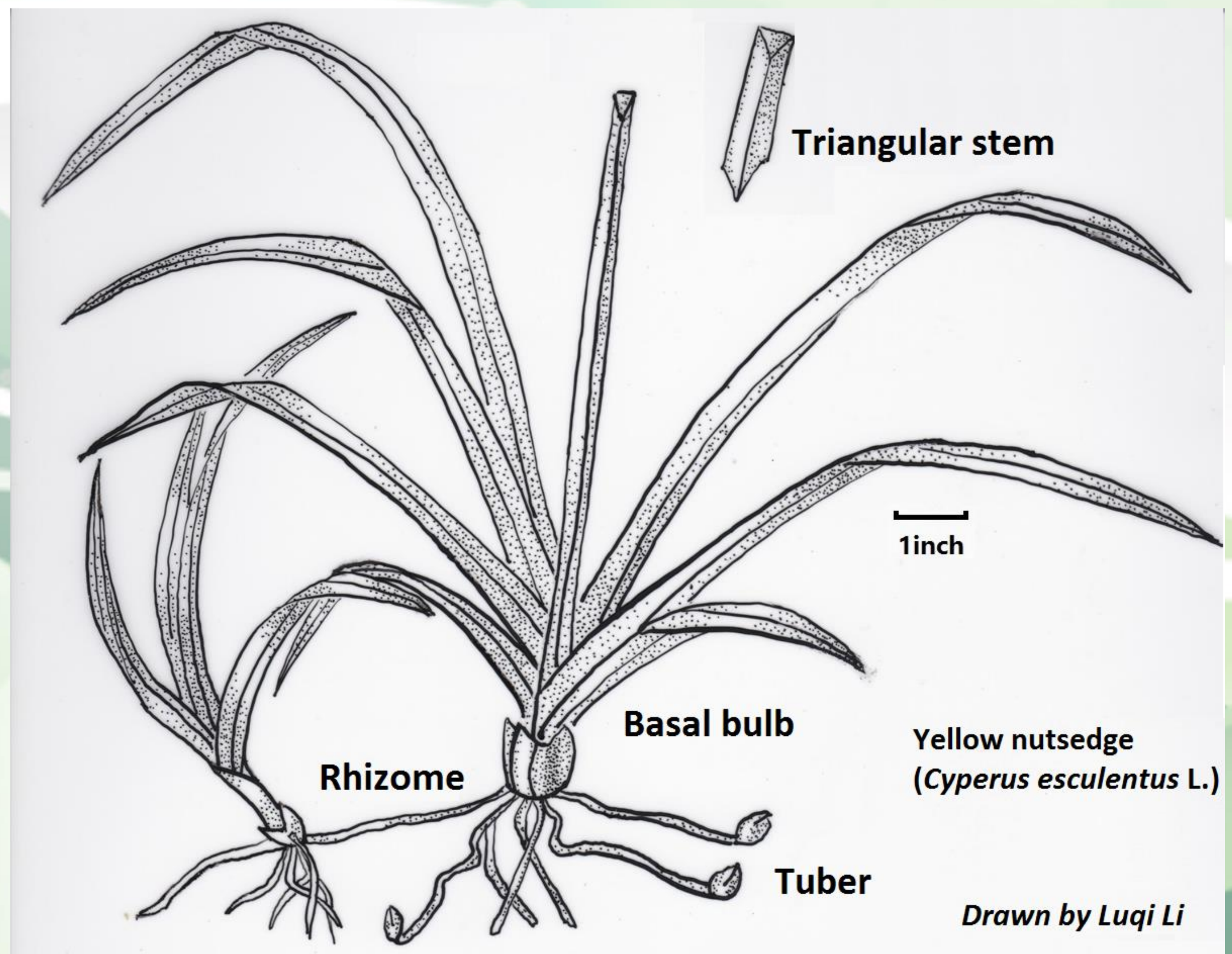
Introduction

Yellow nutsedge (*Cyperus esculentus* L.) is one of the most widely distributed and troublesome weeds in the world (Holm et al. 1991). It competes against turfgrass for moisture and nutrients and reduces turf uniformity, visual appeal and playability on golf courses and sports fields. Herbicide control of yellow nutsedge is inconsistent within regions and across the country, often failing to control regrowth after initial burn-down. Optimal application timing and strategies for halosulfuron and sulfentrazone have not been evaluated in Nebraska. Our objective was to evaluate herbicide combinations and application timing to develop strategies for yellow nutsedge control with halosulfuron or sulfentrazone.

Materials and Methods

- Study was conducted near Mead, NE. Yellow nutsedge was growing within perennial ryegrass (*Lolium perenne* L.).
- Treatments were arranged in a 2 (herbicide) X 2 (single or sequential) X 4 (application date) factorial arrangement with three replications.
- Study was replicated for 4 years.
- A single application of halosulfuron (0.036 kg ai ha^{-1}) or sulfentrazone (0.28 kg ai ha^{-1}) was made on June 3, June 25, July 15 or Aug 5. Sequential applications were made 3 wk after the initial application.
- Percent yellow nutsedge cover was visually rated from June 3 through Sep 17 in 2013, 2014, 2015 and 2016, and on June 3 in the following year (residual control).
- Percent control = $\left(1 - \frac{\text{\% YNS in treated}}{\text{\% YNS in control}}\right) \times 100\%$
- Data were analyzed as a general linear model with PROC GLIMMIX in SAS (Version 9.3, SAS Institute Inc., Cary, NC). Mean separation was performed using Fisher's least significant difference at P $\leq$0.05.



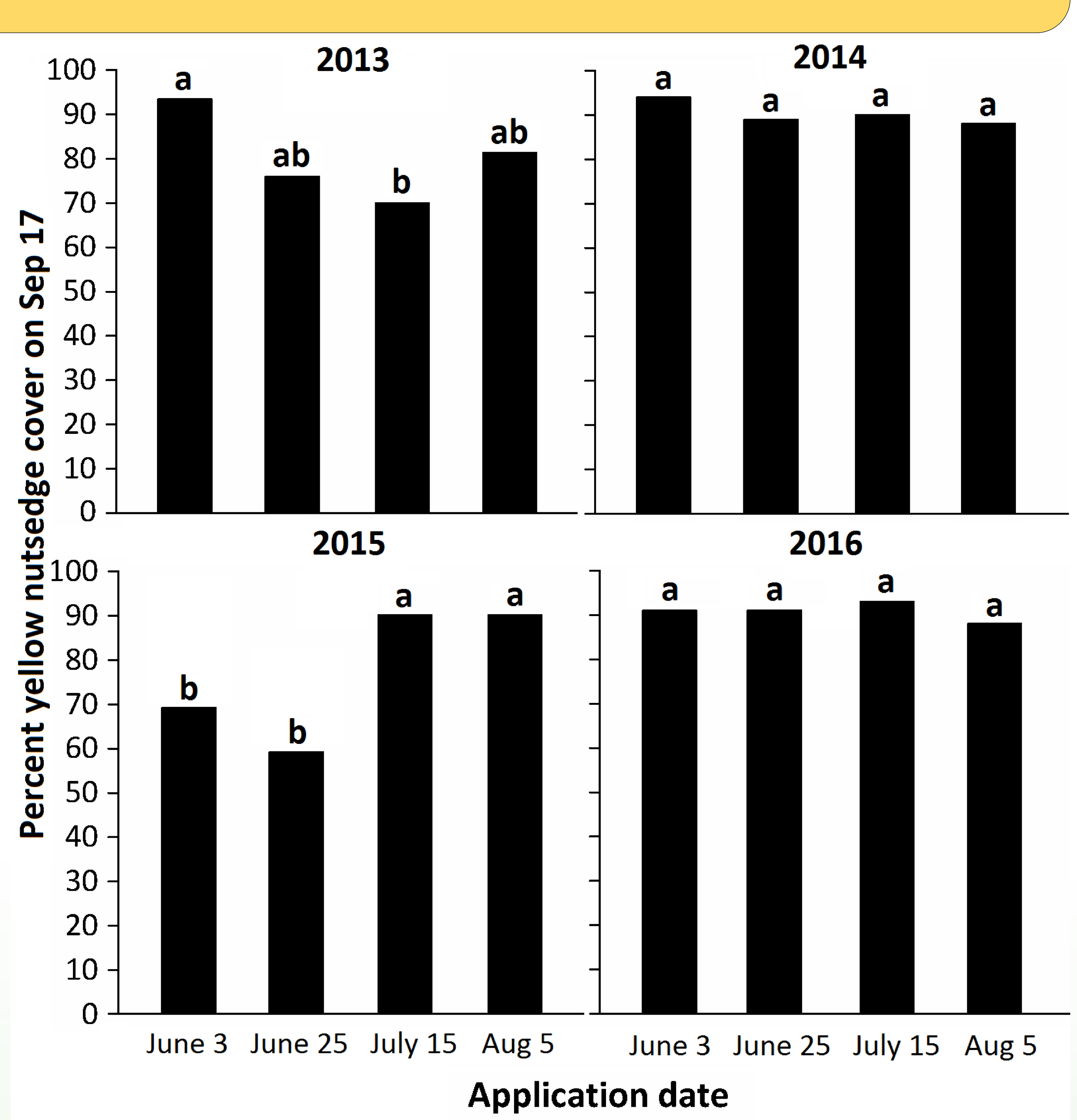


Figure 1: Percent yellow nutsedge control rated on Sep 17 in 2013, 2014, 2015 and 2016. Two herbicides were combined. Means with a different letter are significantly different at P=0.05 within each year.

Herbicide (Years and strategies were combined)	% Control on Sep.17	Residual control
Halosulfuron	**91a**	**76a**
Sulfentrazone	82b	62b
Application Strategies (Years and herbicides were combined)	**%Control on Sep.17**	**Residual control**
Single Application	82b	60b
Sequential Application	**91a**	**78a**

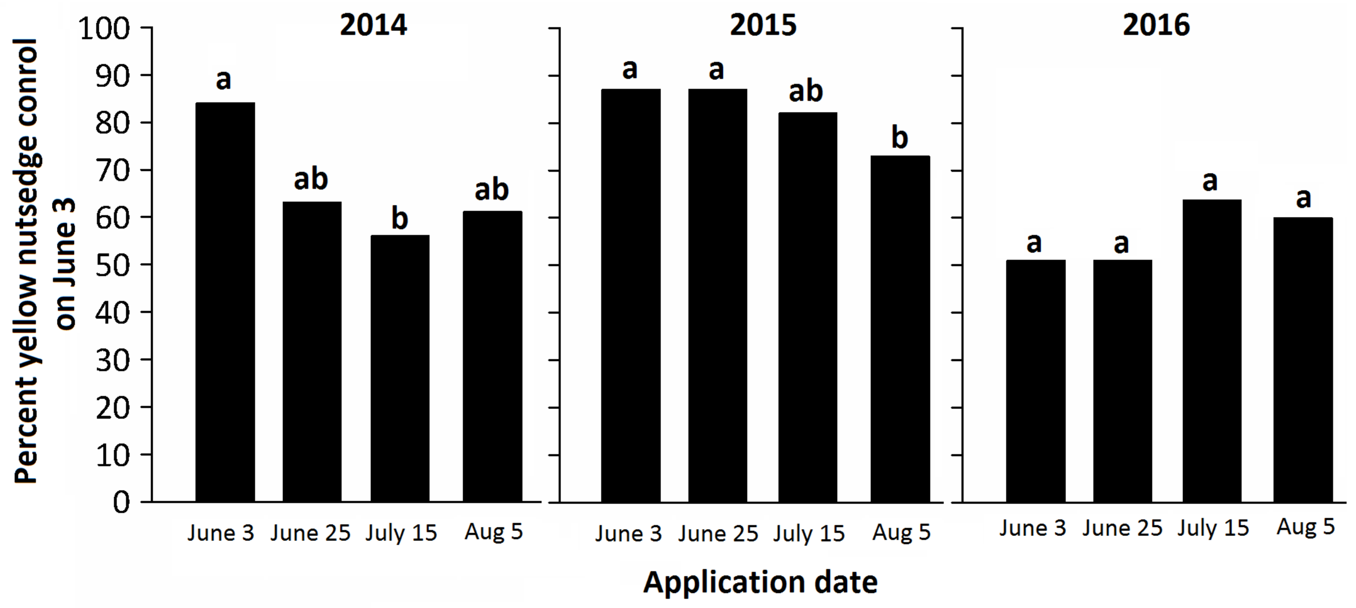
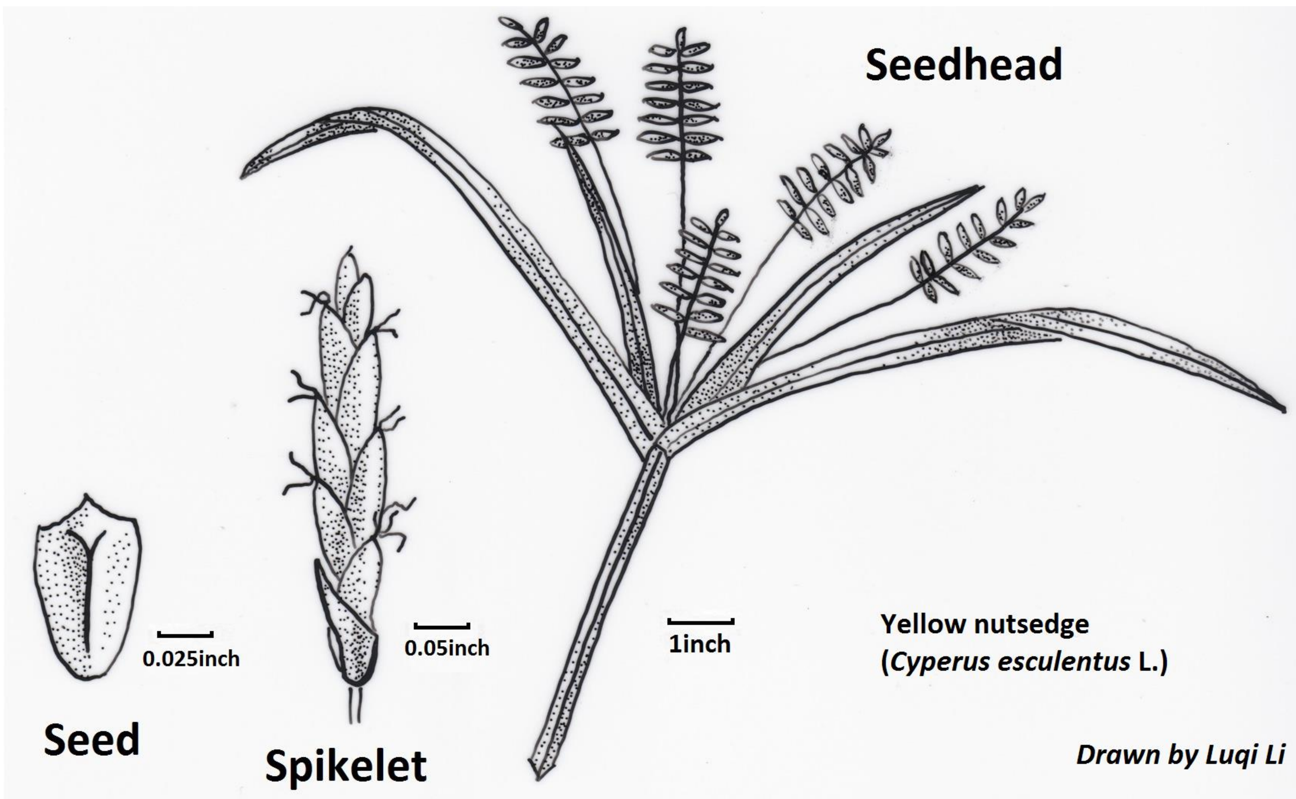


Figure 2: Percent yellow nutsedge residual control as rated on June 3 in 2014, 2015 and 2016. Means with a different letter are significantly different at P=0.05 within each year.



Results and Discussion

- Regardless of herbicide, applications made on June 3 resulted in highest in-season and residual control.
- High level of in-season control when herbicides were applied on July 15 and Aug 5 are likely due to slowing vegetative growth of yellow nutsedge post summer solstice.
- Halosulfuron resulted in higher control, both in-season and residual, compared to sulfentrazone.
- Sequential application resulted in highest in-season and residual control compared to single application, regardless of year and herbicide.

Summary

- Herbicide application should be made during first week of June, followed by a second application in three weeks to maximize in-season and residual yellow nutsedge control.
- User may choose halosulfuron over sulfentrazone when controlling yellow nutsedge within turf.

Reference: Holm, L.G., D.L. Plucknett, J.V. Pancho, and J.P. Herberger, 1991. The world's worst weeds. Kriegar Publishing Company, Malabar, FL. p.125-133.