

Chemical Control of *Cynanchum acutum* in Sugarcane Plant Fields

Iman Ahmadi¹ and Mohammad Hossain Gharineh^{2*}

- 1- Ph.D. Student of Agriculture, Department of Agronomy, Faculty of Agriculture, Khuzestan Agricultural Sciences and Natural Resources University, Iran
- 2- ***Corresponding Author:** Associate Professor, Department of Agronomy, Faculty of Agriculture, Khuzestan Agricultural Sciences and Natural Resources University, Iran (hossain_gharineh@yahoo.com)

Received: 11 December, 2017

Accepted: 25 April, 2018

Abstract

Background and Objectives

Weeds are the most important factors in sugarcane yield loss. Successful weed control is essential for economical sugarcane production. Weeds can reduce sugarcane yields by competing for moisture, nutrients, and light during the growing season. Weed control is most critical early in the season prior to sugarcane canopy closure over the middle rows middles. Herbicides can be useful and economical tools in sugarcane production. Indaziflam is an alkylazine herbicide that is labeled for use in turf, for perennial crops and for nonagricultural situations for preemergent control of grasses and broad leaf weeds. The objective of this research was evaluation of the efficacy of indaziflam on control of *Cynanchum acutum* in sugarcane fields in Khuzestan, Iran.

Materials and Methods

The experiment was conducted in 2015 growing season in a sugarcane field Shoaebiyeh, Shoushtar, Khuzestan, Iran. The trial was randomized in complete block design with four replications. Variety and type of culture were Cp69-102 and plant, respectively. Treatments were 1-indaziflam (75 g ai ha⁻¹, as preemergence); 2-indaziflam (50 g ai ha⁻¹ as preemergence); 3- Trifloxysulfuron sodium + ametryn (1875 g ai ha⁻¹, as postemergence); 4-2,4-D+MCPA (1687.5 g ai ha⁻¹); 5-glyphosate + Ammonium sulfate 6- weeding and 7- weed infested. The herbicides were applied with backpack sprayer equipped with flooding and T-jet nozzles calibrated to deliver 300 L ha⁻¹. Every two weeks, dry weight and density reduction percentage of *Cynanchum acutum* were measured and 90 days after herbicide applying, stem length, stem weight, the middle internode diameter and length of sugarcane and also purity, pol and recoverable sugar of sugarcane were determined. Statistical calculations were accomplished through the SAS 9.2 software and graphs were drawn by the Excel software.

Results

However, indaziflam efficacy was reduced over time. Other herbicides such as indaziflam as 50 g ai ha⁻¹ and trifloxysulfuron sodium + ametryn indicated a good effect in *Cynanchum acutum* control compared with 2,4-D + MCPA and glyphosate + Ammonium sulfate. Single stem weight (0.72 kg), the middle internode diameter (1.85 cm), number of internode (18.2 cm) and cane yield (117.90 t ha⁻¹) were the greatest in indaziflam (75 g ai ha⁻¹). The greatest brix (21.48%), invert sugar (0.533%), recoverable sugar (11.26%) and the lowest fiber content (12.61 t ha⁻¹) were obtained in indaziflam treat (75 g ai ha⁻¹).

Discussion

The present research indicated indaziflam could control *Cynanchum acutum* in sugarcane field although indaziflam efficacy was reduced over time. However, there were no adverse effects of indaziflam rates on sugarcane observed; therefore, this herbicide could be used in sugarcane fields. Since highly intensive use of herbicides in fields causes to herbicide resistance, herbicides with different mechanisms of action should be registered for weed control of sugarcane. Because of low volume of indaziflam as compared to current herbicide of sugarcane, this is a good candidate for application in sugarcane fields in rotation or mixture with other recommended herbicides.

Keywords: Pol and recoverable sugar, Purity, Sugarcane yield

This article has been retracted