

# Proceedings



## ISWS Golden Jubilee International Conference

on

## "Weeds and Society: Challenges and Opportunities"

21-24 November 2018  
Jabalpur, India



Supported by



Organized by

**Indian Society of Weed Science**

In collaboration with

**Indian Council of Agricultural Research  
ICAR - Directorate of Weed Research**



**Citation:** Proceedings of ISWS Golden Jubilee International Conference on “Weeds and Society: Challenges and Opportunities”, 21-24 November 2018, ICAR-DWR, Jabalpur, Indian Society of Weed Science, India. 428 p.

**Editors:**

Dr J.S. Mishra (Chairman)  
Dr. R.P. Dubey (Convener)  
Dr. Ashok Yadav  
Dr. J.P. Deshmukh  
Dr. P.P. Choudhury  
Dr. Ramanjit Kaur  
Dr. S.P. Singh  
Dr. Simerjeet Kaur  
Dr. V.K. Choudhury  
Dr. Yogita Gharde

**Technical support & cover design**

Mr Gyanendra Pratap Singh

© 2018 Indian Society of Weed Science (ISWS)

Further information:

Indian Society of Weed Science  
ICAR-Directorate of Weed Research  
Jabalpur - 482 004, (MP), India  
Website: [www.isws.org.in](http://www.isws.org.in)  
E-mail : [iswsjbp@gmail.com](mailto:iswsjbp@gmail.com)  
Phone : 91-761-2353138; Fax : 91-761-2353129

**Cover page Photographs (Left to Right)**

A water channel severely infested with water hyacinth; *Phalaris minor* infestation in a wheat field;  
Invasion of *Mikania micrantha* on trees in forest



ISWS Golden Jubilee International Conference on "Weeds and Society: Challenges and Opportunities", ICAR-Directorate of Weed Research, Jabalpur, India during 21-24 November 2018



O-97

## Evaluation of different post-emergence herbicides as alternative to imazethapyr for weed control in *Kharif* pulses and their residual effect on succeeding wheat and mustard crops in arid Rajasthan

\*N. K. Jat, D. V. Singh and Praveen Kumar

ICAR- Central Arid Zone Research Institute, Jodhpur, Rajasthan 342 003

\*Email: nandagro09@gmail.com

Mung bean and moth bean are the important *Kharif* pulse crops in arid and semi arid regions of Rajasthan. Being the *Kharif* crops, as well as having very slow initial growth, these crops often face heavy weed infestation. In mung bean and moth bean yield losses due to weeds infestation have been estimated to be around 50% and 75%, respectively. This warrant effective weed control as foremost management practice to boost productivity of these crops in the region. Hand weeding, the most common weed management practice followed is not only cumbersome but costly too. Hence, to save time and labour cost, post emergence herbicide like imazethapyr either alone or in combination with other herbicides is recommended for *Kharif* pulses. However, these herbicides have been reported to cause crop setback in *Kharif* crops under moisture stress and have residual toxicity on succeeding crops. Hence, the present study was undertaken during 2017-18 to identify optimum dosage of alternative herbicide as broad spectrum post-emergence weedicide for mung bean and moth bean with minimum residual toxicity on succeeding crops. In weed management treatments, weedy check and weed free were taken as absolute control, while hand weeding was taken being farmer's practice and pendimethalin as recommended pre-emergence herbicide for comparison with post emergence herbicides for weed control efficacy and economics. Among the test herbicides as post-emergence herbicides imazethapyr (50 g/ha); imazethapyr + imazamox (60 g/ha); clodinafop-propargyl + sodium-acifluorfen (187.5 g and 250 g/ha); propaquizafop + imazethapyr (100 g and 125 g/ha) were applied at 20 DAS. During *Rabi* season, mustard and wheat were raised on the same field to assess the residual toxicity of different post-emergence herbicides.

Results revealed that plant height of mung bean and moth bean was not affected significantly due to application of different herbicides, however crop injury due to herbicide, shortest plants were observed under imazethapyr application. In mung bean, propaquizafop + imazethapyr (125 g/ha) recorded highest seed yield (1095 kg/ha) and weed control efficiency (52.5%); and lowest weed density (52.3 weeds/m<sup>2</sup>) and weed dry matter (102.5 g/m<sup>2</sup>) at harvest. However, this treatment was statistically at par with clodinafop-propargyl + sodium-acifluorfen (250 g/ha) in terms of weed density, dry matter and grain yield. In moth bean, significantly highest crop dry matter accumulation and seed yield (969 kg/ha) was recorded in propaquizafop + imazethapyr (100 g/ha) while, imazethapyr + imazamox (60 g/ha) recorded the significantly highest weed control efficiency (58.4%) and lowest weed dry matter (69.4 g/m<sup>2</sup>) and weed density (48.1 weeds/m<sup>2</sup>) at harvest which was closely followed by clodinafop-propargyl + sodium-acifluorfen (250 g/ha). In succeeding mustard, under residual effect of imazethapyr; imazethapyr + imazamox and propaquizafop + imazethapyr (125 g/ha) significantly lower seedling emergence, plant population at 30 DAS, plant dry weight at 45 DAS and grain yield were recorded as compared to clodinafop-propargyl + sodium-acifluorfen. However, in wheat no significant residual effect of herbicides was noticed. It can be inferred from the study that considering the negative effects of imazethapyr containing herbicides on succeeding crops, herbicidal molecules like clodinafop-propargyl + sodium-acifluorfen (250 g/ha) can be alternative safe herbicides for *Kharif* pulses after thorough evaluation.