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Bioefficacy of penoxsulam against broadspectrum weed control in transplanted rice

■ CHANDRA PRAKASH, R.K. SHIVRAN¹ AND N.R. KOLI¹

AUTHORS' INFO

Associated Co-author :

¹Agricultural Research Station,
(M.P.U.A.&T.) Ummedganj, KOTA
(RAJASTHAN) INDIA

Author for correspondence :

CHANDRA PRAKASH

Agricultural Research Station,
(M.P.U.A.&T.) Ummedganj, KOTA
(RAJASTHAN) INDIA
Email : rshivranars2007@gmail.com

ABSTRACT : Comparative efficacy of penoxsulam 24 SC against weed control in transplanted *Kharif* rice was studied at Agricultural Research Station, Ummedganj, Kota (Rajasthan). The experiment was laid out in Randomized Block Design with 7 treatments and 4 replications. The results revealed that the major weed flora associated with the transplanted rice during *Kharif* season included grasses *Echinochloa colonum*, *Echinochloa crusgalli*, sedges like *Cyperus rotundus*, *Cyperus difformis*, *Cyperus iria* and broad leaf weeds *Eclipta alba* and *Ammenia baccifera*. Penoxsulam 24 SC @ 0.0250 kg a.i/ha applied at 0-5 days after transplanting was most effective to check all types of weed population and their growth. This treatment also gave the maximum grain yield (6.1 and 5.7t/ha) and straw yield (8.6 and 8.2t/ha) of rice resulting in lowest weed index (5.08 and 7.41), dry weight of weeds (7.3 and 10.6g/m²), weed persistence index (0.01 and 0.01) and highest herbicidal efficiency index (3.51 and 3.46) in both the years, respectively. Therefore, penoxsulam 24 SC @ 0.0250 kg a.i/ha applied at 0-5 days after transplanting may be recommended to replace the tedious, time consuming and expensive hand weeding practices of weed control in transplanted *Kharif* rice.

Key Words : Bioefficacy, Weed control, Penoxsulam 24 SE, Transplanted rice

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Rice is a lynch pin in the culture of many countries. More fundamentally, rice is the staple food for more than half the world. In Asia alone, more than two billion people obtain over 60 per cent of their calories from rice. In India, it is also the staple food for millions of people and is next to wheat. It plays a pivotal role in the economy of India. Weeds are regarded as one of the major negative factors of crop production. Weeds share light, nutrients and water with the crop and thus, interfere with rice growth in many ways. Living or decaying weeds can secrete toxic root exudates or leaf leachates that depress the normal growth of rice plant. Weed infestation provides a habitat for growth of various pest organisms (insects, nematodes and pathogens), which adversely affect the production of rice and other crops. The productivity of wet season rice is very low as weeds pose serious menace as compared to other rice ecosystems. This is because of aerobic soil condition, high temperature and dry tillage practices. With the introduction of short statured high yielding rice varieties with erectophylic leaves, the weed menace becoming more acute (Mishra *et al.*, 2004) the weed flora under transplanted condition is very much diverse and consists of grasses, sedges and broad leaf weeds causing yield

reduction of rice up to 76 per cent (Singh *et al.*, 2004). The effective control of weeds at initial stages (0-40DAT) can help in the improving productivity of this crop. Therefore, evaluation of new herbicides for wide spectrum control of weed flora is imperative. Recent trend of herbicide use, is to find out an effective weed control measure by using low dose high efficiency herbicides which will not only reduce the total volume of herbicide use but also the application becomes easier and economic (Kathiresan, 2001). In view of the above fact, the present study was undertaken to evaluate the performance of penoxsulam 24 SC in transplanted *Kharif* rice and associated weeds.

RESEARCH PROCEDURE

A field experiment was conducted during *Kharif* season of 2006 and 2007 at the Agriculture Research Station, Ummedganj, Kota (Rajasthan). The soil was clayey in texture, slightly alkaline in reaction (pH 7.5), low in organic carbon (0.56%) and medium in available nitrogen (278 kg/ha), medium in available phosphorus (12.3 kg/ha) and high in available potassium (305 kg/ha). The experiment was laid out in