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# Evaluation of quizalofop - p - tefuryl 4.41% EC against grassy weeds in black gram (*Vigna mungo* L.)

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Field experiments were conducted during season of 2007-08 and 2008-09 at experimental research farm of Institute of Pesticide Formulation Technology, Gurgaon, India, to evaluate the efficacy of quizalofop - p - tefuryl 4.41% EC @ 750, 1000 and 1500 ml $ha^{-1}$ against grassy weeds of black gram crop. Post emergence application of quizalofop - p - tefuryl 4.41% EC @ 1500 ml $ha^{-1}$ at 15 days after sowing provides significant weed control of grassy weeds and increase the seed yield of blackgram. Application of quizalofop - p - tefuryl 4.41% EC @ 1000 ml $ha^{-1}$ and fenoxaprop-p-ethyl 9.3% EC @ 750 ml $ha^{-1}$ were found statistically at par in reducing weed density at 15 and 30 days after application.

Black gram, (*Vigna mungo* L.) or urid is one of the important summer pulse crop grown in India. It is affected by a number of grassy and broad leaf weeds (Veeraputhiran and Chinnusamy, 2008). The weeds compete with crop for nutrients, moisture, space and light and cause an average loss up to 45% depending upon the species and density of weeds. Selective herbicide can be one be one of the best alternatives for economic and timely weed control in black gram as it depends on availability of labour in time and field accessibility. Recently some post emergence herbicides are being marketed with the assurance of selective control of weeds in black gram. The present study was undertaken to screen the newer post emergence herbicide quizalofop-p - tefuryl for their effectiveness in comparison with recommended herbicides.

Field experiments were conducted during kharif season of 2007-08 and 2008-09 at experimental research farm of Institute of Pesticide Formulation Technology, Gurgaon, India. The site of the experimental field was sandy loam with pH 7.4. The experiments were laid out in a Randomized Block Design with six treatments and four replications in plots of size 3×5 $m^2$. The application of post emergence herbicide quizalofop - p - tefuryl @ 750, 1000 and 1500 ml $ha^{-1}$ as a early post emergence herbicide was carried out at 15 days after sowing of crop with knapsack sprayer using flat fan nozzle @ 375 liters water $ha^{-1}$. Two hand weeding were followed at 15 and 30 days after sowing. All the agronomical practices recommended in the state package of practices were followed to raise a good crop. Observation on weed count and biomass was recorded on 15 and 30 days after application. Percent weed control was calculated on the basis of total weed count in each plot in comparison with untreated check. The observation on yield was recorded at the time of harvest. In order to see the significance of treatment effects, the data were subjected to the statistical analysis by 'analysis of variance'(ANOVA) technique given by Fisher (1958).

**Effect on weeds**

In the experimental plots the dominant grassy weed flora were *Digitaria sanguinalis, Echinochloa colona, Echinochloa crus-galli, Eleusine indica* while sedge weed flora was *Cyperus rotundus*. Two years pooled data revealed that post emergence application of quizalofop - p - tefuryl gave significant control of weed population (Table 1). Better efficacy was obtained by increasing the doses of quizalofop - p - tefuryl as against control plot that showed the maximum density of the grassy weeds. It was also found that among treatments maximum percent weed control was found in quizalofop - p - tefuryl @ 1500 ml $ha^{-1}$ (92.7%) followed by quizalofop - p - tefuryl @ 1000 ml $ha^{-1}$ (89.5%) fenoxaprop-p-ethyl @ 750 ml $ha^{-1}$ (87.3%). However, quizalofop - p - tefuryl @ 1000 and 1500 ml $ha^{-1}$ and fenoxaprop-p-ethyl @ 750 ml $ha^{-1}$ were found statistically at par in reducing weed density at 15 and 30 days after application. Anonymous (2008) reported that post emergence spray of quizalofop 5 EC @ 2ml $litre^{-1}$ at 10-30 days after sowing controls the grasses effectively in black gram.

**Effect on grain yield**

Maximum seed yield (12.9 q $ha^{-1}$) was observed in two hand weeded plots (Table 1) followed by quizalofop -p- tefuryl @ 1500 ml $ha^{-1}$(11.05 q $ha^{-1}$) and @ 1000 ml $ha^{-1}$ (10.60 q $ha^{-1}$). However, quizalofop - p - tefuryl @ 1000 amd 1500 ml $ha^{-1}$ and fenoxaprop-p-ethyl EC @ 750 ml $ha^{-1}$ were found statistically at par in yield. Post emergence application of Fenoxaprop-P-Ethyl 9.3% EC @ 68 g a.i. $ha^{-1}$ recorded highest grain yield (Rao, 2008)

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**Phytotoxicity**

quizalofop - p - tefuryl 4.41% EC at above three doses tested have not exhibited any phytotoxicity symptoms on black gram crop from the time of application till the date of harvest and found to be safe to the crop growth. Quizalofop - p - tefuryl @ 1000 ml $ha^{-1}$ and fenoxaprop-p-ethyl @ 750 ml $ha^{-1}$ were found statistically at par in reducing weeds counts $m^{-2}$ and in preserving the yield of black gram. quizalofop - p - tefuryl @ 1000-1500 ml $ha^{-1}$ provides effective control of grassy weeds in black gram crop and quizalofop - p - tefuryl is safe to the crop.

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**Table 1: Efficacy of newer herbicide quizalofop - p- tefuryl 4.41% EC against grassy weeds in black gram (Pooled of two years)**

| Treatments | *Total grassy weed count $m^{-2}$ | | *Total weed dry matter (g $m^{-2}$) | Weed control (%) | Yield (q $ha^{-1}$) |
|---|---|---|---|---|---|
| | 15 DAA | 30 DAA | | | |
| Quizalofop-P-tefuryl 4.41 EC @750 ml $ha^{1}$ at 2-4 leaf stage of weeds | 21.50 | 27.40 | 17.20 | 78.90 | 9.10 |
| Quizalofop-P-tefuryl 4.41 EC @1000 ml $ha^{1}$ at 2-4 leaf stage of weeds | 11.30 | 13.60 | 8.90 | 89.50 | 10.60 |
| Quizalofop-P-tefuryl 4.41 EC @1500 ml $ha^{1}$ at 2-4 leaf stage of weeds | 8.10 | 9.40 | 5.10 | 92.70 | 11.05 |
| Pendimethalin 30 EC @ 2500 ml $ha^{1}$ as pre-emergence | 12.40 | 16.40 | 10.10 | 87.30 | 9.910 |
| Two hand weeding at 15 @ 30 DAS | 2.10 | 3.30 | 1.60 | 97.40 | 12.90 |
| Untreated check | 99.60 | 129.80 | 98.10 | 0.00 | 7.30 |
| **LSD(0.05)** | **7.96** | **7.46** | **10.98** | | **1.22** |

**Mean of four replications, DAA – Days after application, DAS – Days after sowing*

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