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Effect of herbicide Prechlor on the performance of T. *aman* rice

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Abstract

An experiment was conducted at the Agronomy Field Laboratory, Bangladesh Agricultural University (BAU), Mymensingh during the period from July to December 2012 to find out the effect of herbicide Prechlor 500 EC on weed control and performance of transplant *aman* rice. The experiment was laid out in a randomized complete block design with four replications. The experiment consisted of two varieties viz., BRRI dhan41 and Nizershail, and four levels of Prechlor @ 0, 0.5, 1.0 and 1.5 L ha^{-1}. *Monochoria vaginalis*, *Nymphaea nouchali*, *Paspalum scrobiculatum*, *Echinochloa crusgalli* and *Scirpus juncodies* were the major weeds in the experimental plots. Prechlor 500EC @ 1.5 L ha^{-1} showed the best performance in reducing weed density, weed dry weight and increased weed control efficiency but reduce grain yield. Variety had significant influence on all the yield and yield contributing characters of rice. Higher grain yield (3.09 t ha^{-1}) was obtained from BRRI dhan41. Different levels of Prechlor also had significant effect on yield and yield contributing characters such as number of total tillers $hill^{-1}$, number of effective tillers $hill^{-1}$, panicle length, spikelets $panicle^{-1}$, grains $panicle^{-1}$, grain yield, straw yield and harvest index. Prechlor @ 1.5 L ha^{-1} showed best performance with respect to most yield attributes, grain and straw yields and the lowest grain yield was obtained from Prechlor @ 0 L ha^{-1}. The interaction effects of variety and herbicide Prechlor had significant effect on all yield attributes except plant height, effective tillers $hill^{-1}$, panicle length, 1000-grain weight and harvest index. The highest grain yield (3.62 t ha^{-1}) was obtained from variety BRRI dhan41 with Prechlor @ 1.5 L ha^{-1}. The results suggest that farmers can be advised to use herbicide Prechlor @ 1.5 L ha^{-1} to boost up the production of BRRI dhan41 controlling weeds during *aman* season under the agro-climatic condition of the study area.

Keywords: Herbbicide, Prechlor, T. aman rice

Introduction

Bangladesh has three rice growing seasons among which transplant *aman* (T. *aman)* rice covers about 48.97% of total rice area and it contributes to 38.13% of the total rice production in the country (BBS, 2011). Transplant *aman* covers the largest area of 5794 thousand ha with a production of 12284 thousand metric tons and average yield was about 2.12 t ha^{-1} (BBS, 2012) which is much lower than that of other rice producing countries like Japan (6.8 t/ha), Korea (6.8 t/ha) and China (6.3 t/ha) (FAO, 2000; IRRI, 2005). The horizontal expansion of rice area in the country is not possible due to increasing population pressure. So, the only avenue left is to increase the production of rice through vertical expansion where the use of improved varieties are the most effective means to increase the yield of transplant *aman* rice.

Among the various factors responsible for low rice production, weeds are considered to be as one of the major limiting factors due to manifold harmful effects (Kalyanasundaram *et al*., 2006). In Bangladesh, weed infestation reduces the grain yield by 70-80% in *aus* rice (early summer), 30-40% for transplanted *aman* rice (late summer) and 22-36% for modern *boro* rice cultivars (winter rice) (BRRI, 2006). Subsistence farmers of the tropics spend more time, energy and money on weed control than on any other aspects of crop production (Kassasian, 1971). Poor weed control is one of the major factors responsible for reduction in yield including type of weed flora and their intensity (Amarjit *et al.,* 1994). Therefore, weed control with minimum cost and less adverse effect on environment is of prime importance.

In Bangladesh, the traditional methods of weed control practices include preparatory land tillage, hand weeding by hoe and hand pulling. Usually two/three hand weeding are normally required for optimum yield from rice crop keeping in view the nature of weeds and their intensity. Hand weeding is very laborious, time consuming and expensive. In addition, during the peak period, the availability of labor is also becoming a serious problem by time. However, herbicides are used successfully for weed control in rice fields for rapid effect, easier to application and low cost involvement in comparison to the traditional methods of hand weeding (Mian and Gaffer, 1969). Herbicidal weed control methods offer an advantage to save labour and money which was cost effective (Ahmed *et al*., 2005). In some cases, however, phytotoxicity by herbicides was observed which eventually led to lower yield performance (Mandal *et al*., 1995).

Thus, the appropriate weeding practices need to be adopted by the farmers with a view to reducing weed infestation and maximizing rice yield. Replacement of traditional weeding in transplant *aman* rice by herbicide would help to obtain higher crop yield with less effect and cost. Therefore, the present study was undertaken to assess the effect of herbicide (Prechlor 500 EC) on growth, yield and also phytotoxicity to transplant *aman* rice.

Materials and Methods

The study was carried out at the Agronomy Field Laboratory, Bangladesh Agricultural University (BAU), Mymensingh during the period from July to December 2012. The experimental treatment consisted of two factors. They are cultivar: 2**-** BRRI dhan41 (V_1) and Nizershail (V_2); herbicidal treatments: 4**-**No weeding (T_1), Prechlor 500 EC@ 0.5L ha^{-1} (T_2), Prechlor 500 EC @ 1.0L ha^{-1} (T_3) (recommended dose), Prechlor 500 EC @ 1.5L ha^{-1} (T_4). Prechlor was applied 5 days after transplanting (DAT) by knapsack sprayer in presence of 4-5 cm standing water in the plots. Weeds were allowed to grow from transplanting to harvesting in all the no weeding plots without any disturbance. The experiment was laid out in a randomized complete block design with four replications. Treatment combinations were assigned at random in block. Each plot size was 4.0 m × 2.5 m (10 m^2). The distance between the blocks was 1 m and the spacing between the unit plots was o.5 m. The experimental plots were fertilized with urea, triple super phosphate, muriate of potash, gypsum and zinc sulphate @ 180, 100, 70, 60, 10 kg ha^{-1}, respectively in case of BRRI dhan41 and 90, 50, 35, 30, 5 kg ha^{-1} respectively in case of Nizersail. All the fertilizers expect urea were applied at the time of final land preparation. Urea was top dressed in three equal splits at 15, 30 and 45 days after transplanting (DAT). Thirty-day-old seedlings were transplanted in the unit plots on 23 July 2012 at the rate of three seedling $hill^{-1}$ maintaining a spacing of 25 cm from row to row and 15 cm from hill to hill. The crop of each plot was harvested from 1m^2 (1m × 1m) of the central area with sickle at full maturity. Transplanted plots of BRRI dhan41 were harvested on 5 December 2012 and Nizershail were harvested on 17 December 2012. Just prior to harvesting five hills excluding the border plants and the harvest area of each plot were selected at random and uprooted for collecting data on yield components. The grain and straw weight for 1m^2 areas were recorded after proper sun drying and then converted into t ha^{-1} at 14% moisture content. Data were collected on weed density and weed dry weight and plant height, total tillers $hill^{-1}$, effective tillers $hill^{-1}$, non-effective tillers $hill^{-1}$, panicle length, grains $panicle^{-1}$, sterile spikelets $panicle^{-1}$, 1000-grain weight, grain yield, straw yield and harvest index. Data on weed density were collected from each plot at vegetative growth stage of the rice plants by using 0.5 m × 0.5 m quadrate as per method described by Cruz *et al.* (1986). The quadrate was placed in three spots at random outside 1m^2 central areas, kept for taking yield data. The weeds within the quadrate were counted species-wise and converted to number m^{-2} multiplying by four. After counting the weed density, the weeds inside each quadrate were uprooted, cleaned, separated species-wise and dried first in the sun and then in

an electrical oven for 72 hours at a temperature of 80°C. The dry weight of each species was taken by an electrical balance and expressed in g m^{-2}. Weed control efficiency (WCE) was calculated using the following formula developed by Sawant and Jadhav (1985).

$$WCE = \frac{DWC - DWT}{DWC} \times 100$$

Where, WCE = Weed control efficiency, DWC = Dry weight of weeds in the weedy check, DWT = Dry weight of weeds in the weeding treatment.

The collected data were analyzed statistically following the ANOVA technique and the mean differences were adjudged by Duncans Multiple Range Test (Gomez and Gomez, 1984) using a statistical computer package program MSTAT-C.

Results and Discussion

Infested weed species found in the experimental plots belong to six families of which four were broad-leaved, three were grasses and three were sedges. The particulars of weed's local name, scientific name, family, morphological type and the life cycle have been presented in Table 1. It has been shown that the highly infested weed in the experimental plots was Panikachu (*Monochoria vaginalis*). The second highest infested weed was Pani shapla (*Nymphaea nouchali*) and the lowest one was Sabuj nakful (*Cyperus difformis*). Bari *et al*. (1995*)*reported that the three important weeds of transplanted *aman* rice fields were *Fimbristylis miliacea, Paspalum scrobiculatum* and *Cyperus rotundus* at BAU farm*.* But from the same location Mamun *et al.* (1993) reported that *Fimbristylis miliacea, Lindernia antipola* and *Eriocaulen cenerseem* were important species of weeds in transplant *aman* rice field. The findings of present results varied slightly from those reports and it might be due to seasonal variations.

Effect of variety and herbicide Prechlor on weed density and weed dry weight

The significant effect on total weed population m^{-2} was found in different varieties at 25 DAT and 50 DAT (Table 2). Higher weed population (14.69 m^{-2}) and dry weight (5.23 g m^{-2}) were found in BRRI dhan41 (V_1) and lower weed population (13.69 m^{-2}) was found in Nizershail (V_2) at 25 and 50 DAT. This might be due to competitive effect of variety Nizershail which was more taller than BRRI dhan41. Singlachar *et al.* (1978) reported that dwarf plant with its erect leaf habit promoted more weed growth and caused more loss than the tall cultivar. Total weed population m^{-2} was also significantly affected by different herbicidal treatments at 25 DAT and 50 DAT (Figure 1). The highest weed population was found in no Prechlor application and the lowest weed population was found when Prechlor 500 EC was applied @ 1.5 L ha^{-1} (T_4) both at 25 and 50 DAT. Rekha *et al.* (2002) also reported that weed density was lower in all weeding practices compared to the unweeded control plot. Al-Kothayri and Hasan (1990) reported that all herbicidal treatments reduced weed population significantly compared to weedy check. It was reported that Ronstar 25 EC @ 2.0 L ha^{-1} controlled weed in transplanted *aman* rice most effectively (Ghua, 1991; BRRI, 1990). Tin case of variety and herbicidal interaction the highest weed population (25.25 m^{-2}) was observed in the variety Nizershail × No Prechlor application treatment at 25 DAT and (46.50 m^{-2}) in BRRI dhan41 × No Prechlor application treatment at 50 DAT, respectively (Table 3).

The significant effect on total dry weight of weed was found due to different levels of Prechlor at 25 and 50 DAT (Table 4). The highest weed dry weight was found in no Prechlor application treatment at both 25 DAT (9.39 g m^{-2}) and 50 DAT (14.12 g m^{-2}). The lowest dry weight was found in Prechlor 500 EC @ 1.5 l ha^{-1} (T_4) at both 25 DAT (2.03 g m^{-2}) and 50 DAT (3.12 g m^{-2}) (Table 4). Singh and Kumar (1999) also reported that the maximum weed dry weight was recorded in the unweeded control which was significantly higher compared to other weed control practices. The lowest dry weight was recorded when Rifit was applied @ 1litre ha^{-1} + one time hand weeding (1.13 g m^{-2}). Similarly, Jena *et al.* (2002) reported that oxadiazon had better weed control efficiency when supplemented with one hand weeding at 50 DAT in rice field. It was also found that the doses of herbicides when supplemented with one hand weeding were more effective than other weed control practices.

The efficiency of weed control was determined on the basis of weed dry matter accumulation under weedy check. In terms of weed control efficiency, the treatment T_4 (Prechlor 500 EC @ 1.5 L ha^{-1}) was the best in comparison to other treatments which provided 78.30% and 77.39% control at 25 and 50 DAT, respectively and treatment T_2 (Prechlor 500 EC @ 0.5 L ha^{-1}) provided lowest weed control efficiency (47.86% and 49.21% over control, respectively) at 25 DAT and 50 DAT (Table 4). Weed density and weed dry weight were significantly influenced by the weed control treatment. The highest weed density and dry weight were observed in the no weeding treatment and the lowest in the treatment of Prechlor 500EC @ 1.5 L ha^{-1}.

Table 1. Infesting weed species found in the experimental plots in T. *aman* rice

Sl. No.	Local name	Scientific name	Family	Morphological type	Life cycle
1.	Panikachu	*Monochoria vaginalis* Pearl.	Pontederiaceae	Broadleaf	Perennial
2.	Panishapla	*Nymphaea nouchali* Willd.	Nymphaeaceae	Broadleaf	Perennial
3.	Chechra	*Scirpus juncoides* Roxb.	Cyperaceae	Sedge	Perennial
4.	Shama	*Echinochloa crusgalli* L.	Gramineae	Grass	Annual
5.	Angta	*Paspalum scrobiculatum* L.	Gramineae	Grass	Perennial
6.	Shusni shak	*Marsilea quadrifolia* L.	Marsileaaceae	Broadleaf	Annual
7.	Joina	*Fimbristylis mileacea* L.	Cyperaceae	Sedge	Annual
8.	Panilong	*Ludwigia hyssopifolia* L.	Onagraceae	Broadleaf	Annual
9.	Anguli ghash	*Digitaria sanguinalis* L.	Gramineae	Grass	Annual
10.	Sanuj nakphul	*Cyperus difformis* L.	Cyperaceae	Sedge	Perennial

Table 2. Effect of variety on weed density and weed dry weight at 25 DAT and 50 DAT

Cultivar	Weed population (m^{-2})		Weed dry weight (g m^{-2})	
	25 DAT	50 DAT	25 DAT	50 DAT
BRRI dhan41	14.69 a	23.88 a	5.23 a	8.02 a
Nizershail	13.69 b	20.06 b	4.31 b	6.02 b
$S\bar{X}$	0.306	0.358	0.219	0.397
$LSD_{0.05}$	0.89	1.05	0.64	1.17
Level of significance	**	**	**	**
CV (%)	8.62	6.53	18.34	22.64

In a column the values having common letter(s) do not differ significantly
** Significant at 1% level of probability

Table 3. Interaction effect of variety and herbicidal treatments on weed density and weed dry weight at 25 DAT and 50 DAT

Variety × Herbicidal treatments	Weed population (m^{-2})		Weed dry weight (g m^{-2})	
	25 DAT	50 DAT	25 DAT	50 DAT
V_1T_1	25.00a	46.50a	9.57a	15.77
V_1T_2	17.00b	24.00c	6.31b	8.85
V_1T_3	8.75d	12.75e	3.11cd	4.17
V_1T_4	8.00d	12.25e	1.96d	3.31
V_2T_1	25.25a	39.25b	9.22a	12.47
V_2T_2	13.50c	20.25d	3.49c	5.70
V_2T_3	8.25d	11.00ef	2.45cd	3.00
V_2T_4	7.75d	9.75f	2.09d	2.93
$S\bar{X}$	0.611	0.717	0.438	0.795
Level of significance	*	*	*	NS
CV (%)	8.62	6.53	18.34	22.64

In a column the values having common letter(s) do not differ significantly
NS = Non significant
* Significant at 5% level of probability
V_1 = BRRI dhan41, V_2 = Nizershail
T_1 = No herbicide application, T_2 = Prechlor 500 EC@ 0.5 L ha^{-1}, T_3 = Prechlor 500 EC@ 1.0 L ha^{-1}, T_4=Prechlor 500 EC@ 1.5 L ha^{-1}

Table 4. Weed control efficiency (%) of different levels of herbicide Prechlor on weed dry weight at 25 and 50 DAT of transplant *aman* rice

Level of herbicide Prechlor (L ha^{-1})	Weed dry weigh (g m^{-2})		Weed control efficiency (%)	
	25 DAT	50 DAT	25 DAT	50 DAT
0.0	9.39a	14.12a	0.00d	0.00d
0.5	4.90b	7.27b	47.86c	49.21c
1.0	2.78c	3.59c	70.49b	74.53b
1.5	2.03d	3.12c	78.30a	77.39a
Level of significance	**	**	**	**
CV (%)	18.34	22.64	18.84	15.69

In a column the values having common letter(s) do not differ significantly
** Significant at 1% level of probability

Effect of variety and different levels of herbicide Prechlor on the yield and yield components of transplant *aman* rice

Effect of variety: Variety exerted significant influence on all the yield and yield contributing characters of transplant *aman* rice (Table 5). Variety BRRI dhan41 produced higher grain yield (3.09 t ha^{-1}), straw yield (5.02 t ha^{-1}) and harvest index (37.83%). The higher grain yield in BRRI dhan41 was the consequences of higher performance of yield contributing characters like number of grains panicle^{-1} (110.02) and heaviest 1000-grain weight (23.40 g) which were much lower (92.41 and 17.37 g, respectively) in Nizershail. Lower grain and straw yields (2.17 and 3.79 t ha^{-1}, respectively) were produced by cv. Nizershail which was the consequences of lower number of grains panicle^{-1}, higher number of sterile spikelets panicle^{-1} and lower 1000-grain weight (Table 5).

Table 5. Effect of variety on yield and yield contributing characters of transplant *aman* rice

Variety	Plant height (cm)	Total tillers hill^{-1} (no.)	Effective tillers hill^{-1} (no.)	Non-effective tillers hill^{-1} (no.)	Panicle length (cm)	Grains panicle^{-1} (no.)	Sterile spikelets panicle^{-1} (no.)	1000-grain weight (g)	Grain yield (t ha^{-1})	Straw yield (t ha^{-1})	Harvest index (%)
BRRI dhan41	122.45b	7.31b	5.97b	1.34b	23.22b	110.02a	23.73b	23.40a	3.09a	5.02a	37.83a
Nizershail	138.29a	8.04a	6.00a	2.04a	24.28a	92.41b	30.75a	17.37b	2.17b	3.79b	36.51b
$S_{\bar{X}}$	1.667	0.118	0.155	0.128	0.204	0.227	0.509	0.056	0.043	0.098	0.569
$LSD_{0.05}$	4.904	0.329	0.456	0.376	0.599	0.668	1.496	0.164	0.127	0.287	1.451
Level of Significance	**	**	**	**	**	**	**	**	**	**	*
CV (%)	5.12	5.61	9.84	20.25	3.43	0.90	7.47	1.09	6.57	8.86	5.31

In a column the values having common letter(s) do not differ significantly
* Significant at $P_{0.05}$, ** Significant at $P_{0.01}$

Effect of herbicide Prechlor: All the crop characters except plant height and 1000-grain weight were significantly influenced by the herbicidal treatments (Table 6). The highest number of total tillers hill^{-1} (8.84), effective tillers hill^{-1} (7.10), highest number of grains panicle^{-1} (103.58) was observed in the treatment of application of Prechlor @ 1.00 L ha^{-1}. The highest grain yield (3.15 t ha^{-1}) and biological yield (8.61 t ha^{-1}) was recorded in herbicide Prechlor 500 EC @ 1.0 L ha^{-1} which was the consequences of production of higher number of effective tiller (7.10) hill^{-1} and the highest number of grain (103.58) panicle^{-1}. The second highest grain yield (3.12 t ha^{-1}) was recorded in treatment Prechlor 500 EC @ 1.5 L ha^{-1}. The lowest yield was obtained from no Prechlor application treatment. This was due to severe competition of weed for moisture, space, light and nutrient between weed and crop and eventually grain yield was reduced. Similar finding was also reported by Gogi *et al.* (2000).

Table 6. Effect of herbicide Prechlor on yield and yield contributing characters of transplant *aman* rice

Level of herbicide Prechlor (L ha^{-1})	Plant height (cm)	Total tillers hill^{-1} (no.)	Effective tillers hill^{-1} (no.)	Non-effective tillers hill^{-1} (no.)	Panicle length (cm)	Grains panicle^{-1} (no.)	Sterile spikelets panicle^{-1} (no.)	1000-grain weight (cm)	Grain yield (t ha^{-1})	Straw yield (t ha^{-1})	Harvest index (%)
0.0	126.66	7.33c	5.04b	2.04a	23.04b	98.82d	28.47a	20.34	1.77c	3.33c	34.65b
0.5	131.45	7.60b	6.00b	1.60b	24.17a	100.12c	28.12a	20.41	2.51b	4.48b	35.92b
1.0	131.40	8.84a	7.10a	1.74a	24.21a	103.58a	25.52b	20.47	3.15a	5.01a	38.53a
1.5	132.03	8.68a	6.71a	2.08a	23.51ab	102.35b	26.85ab	20.32	3.12a	4.48b	39.56a
CV (%)	5.12	5.61	9.84	20.25	3.43	0.90	7.47	6.57	3.96	8.86	5.31
Level of significance	NS	**	**	**	*	**	*	NS	**	**	**

In a column the values having common letter(s) do not differ significantly
NS = Non significant, * Significant at $P_{0.05,}$ ** Significant at $P_{0.01}$

Interaction effects of variety and herbicide Prechlor on the yield and yield components of transplant *aman* rice

Interaction effect of variety and herbicidal weed management had significant influence on all the yield and yield contributing characters of transplant *aman* rice except plant height, effective tillers hill^{-1}, length of panicle and 1000-grain weight (Table 7). The highest grain yields (3.62 and 3.61 t ha^{-1}) were obtained from the interactions of variety BRRI dhan41 application of Prechlor @ of 1.00 L ha^{-1} and variety BRRI dhan41 × application of Prechlor @ of 1.50 L ha^{-1}. The highest grain yields were obtained in these two interactions combinations due to highest number of grains panicle^{-1}, lowest number of sterile spikelets panicle^{-1} and heaviest 1000-grain weight. The lowest grain yield (1.46 t ha^{-1}) was obtained from the interaction effect of variety Nizershail × application of Prechlor @ 0 L ha^{-1}. The highest straw yield (5.50 t ha^{-1}) was observed in the treatment combination of variety BRRI dhan41 an41 × application of Prechlor @ of 1.00 L ha^{-1} which was statistically identical with the treatment combination of variety BRRI dhan41 × application of Prechlor 500EC @ 0.5 L ha^{-1} and variety BRRI dhan41 an41 × application of Prechlor @ of 1.50 L ha^{-1}. The application of Prechlor 500 EC @ 1.50 L ha^{-1} might produced statistically identical yield but it might be toxicity to crop plant and it requires more cost involvement. The results of the present study suggest that the variety BRRI dhan41 superior to Nizershail in terms of grain yield. The herbicide Prechlor 500 EC @ 1.0 L ha^{-1} and Prechlor 500 EC @ 1.5 L ha^{-1} were equally effective than other treatments in controlling weeds. Therefore, it can be concluded that herbicide Prechlor 500 EC @ 1.0 L ha^{-1} or 1.5 L ha^{-1} might be applied for getting maximum yield of BRRI dhan41.

Table 7. Interaction effect of variety and herbicide Prechlor on the yield and yield contributing characters of transplant *aman* rice

Variety × Herbicide dose	Plant height (cm)	Total tillers hill^{-1} (no.)	Effective tillers hill^{-1} (no.)	Non-effective tillers hill^{-1} (no.)	Panicle length (cm)	Grains panicle^{-1} (no.)	Sterile spikelets panicle^{-1} (no.)	1000-grain weight (g)	Grain yield (t ha^{-1})	Straw yield (t ha^{-1})	Biological yield (t ha^{-1})	Harvest index (%)
V_1T_1	118.08	6.38d	5.50	0.86d	22.20	108.18c	23.63d	23.41	2.08d	3.85cd	5.93c	34.92
V_1T_2	122.08	7.20c	5.50	1.70bc	23.79	109.44bc	23.84d	23.36	3.06b	5.48a	8.54a	35.82
V_1T_3	124.60	8.05b	6.53	1.53cd	24.05	110.49b	23.61d	23.46	3.62a	5.50a	9.13a	39.75
V_1T_4	125.00	7.60bc	6.35	1.25cd	22.83	111.95a	23.83d	23.39	3.61a	5.24a	8.86a	40.81
V_2T_1	135.28	7.20c	6.25	0.88d	23.88	89.45f	33.30a	17.28	1.46e	2.80e	4.26d	34.37
V_2T_2	140.65	8.00b	5.58	2.43ab	24.76	90.8e	32.63ab	17.46	1.95d	3.48d	5.43c	36.07
V_2T_3	138.20	9.63a	7.78	1.95bc	24.29	94.21d	27.20c	17.19	2.62c	4.38bc	6.90b	38.25
V_2T_4	139.05	9.75a	7.08	2.93a	24.19	95.20d	29.88bc	17.55	2.67c	4.51b	7.19b	37.40
Level of Significance	NS	0.05	NS	0.05	NS	0.05	0.05	NS	0.05	0.05	0.05	NS
CV (%)	5.12	5.61	9.84	20.25	3.43	0.90	7.47	1.09	6.57	8.86	6.90	5.31

In a column the values having common letter(s) do not differ significantly
NS = Non significant
* Significant at $P_{0.05}$
V_1 = BRRI dhan41, V_2 = Nizershail
T_1 = No Prechlor application, T_2 = Prechlor 500 EC @ 0.5 L ha^{-1}, T_3 = Prechlor 500 EC @ 1.0 L ha^{-1} and T_4 =Prechlor 500 EC @ 1.5 L ha^{-1}

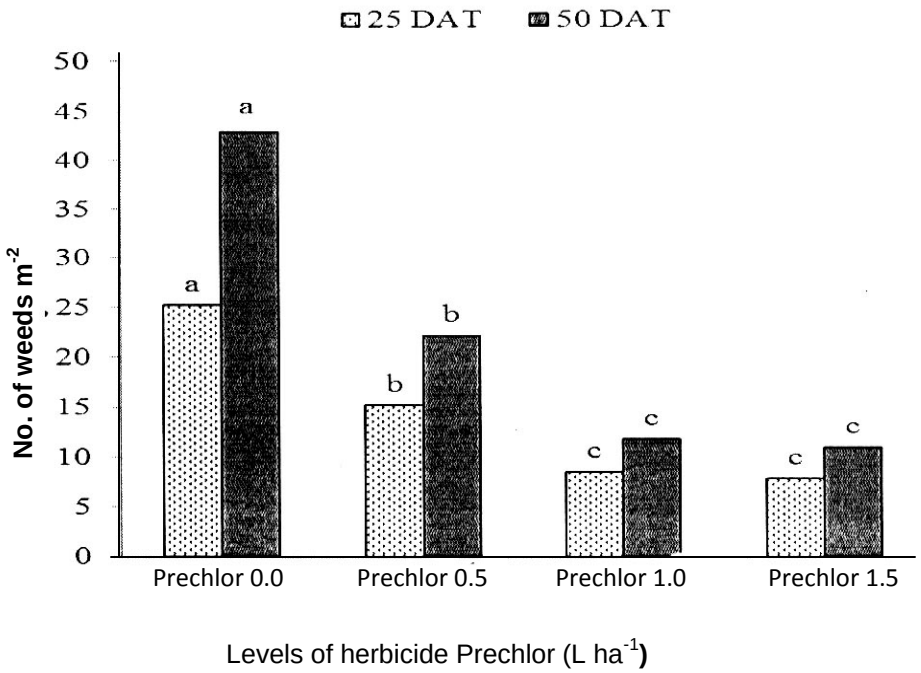

Fig. 1 Effect of different levels of herbicide Prechlor on weed population (m^{-2})

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