~~Efficacy~~Effectiveness of Triafamone~~18.52% SC~~ on Weed ~~dynamics~~ Control and ~~yield~~ Yield of direct sown rice

Abstract

A field experiment was conducted for two consecutive years (2017 -18 and 2018-19) at Agricultural Research Station, Jangamaheswarapuram, Guntur Dist. Andhra Pradesh, India. The experiment consisted of ~~9~~ nine treatments laid out in a complete randomized block design with four replications. ~~Results~~ The results ~~of the experiment~~ revealed that Triafamone18.52 SC doses ~~@~~ at a rate of 100 g *a.i.* ha^{-1} (T_5) and ~~Triafamone 18.52 SC @~~ 50 g *a.i.* ha^{-1} (T_4) ~~applied~~ at the 2-3 leaf stage of weed were effective in controlling all the weeds and ~~also~~ recorded significantly ($P<0.05$) lesserdry weight of weeds over the control during ~~both the years of~~the study.

INTRODUCTION

Weed losses are one of the main causes of low rice productivity. In India, weeds are the most serious and pervasive biological hindrance to agricultural production, accounting for 33% of all pest-related losses (Verma *et al.*, 2015). Infestation of weeds with direct-seeded rice (DSR) continues to be the key factor limiting its yield. ~~According to recent estimations, t~~The average production drop caused by weeds ranged from 12 to 72%, depending on the weed flora and how much competition the weeds offered to the crop (Ramachandra *et al.*, 2014). In DSR, weed control remains a challenging issue because both rice and weeds ~~both~~ emerge ~~at the same time~~side by side. Any DSR production technique intending to increase productivity and profitability must employ an efficient early weed management strategy.

Due to labo~~u~~r shortages and high ~~labour~~ input costs, traditional weed management approaches are time-consuming, labo~~u~~r-intensive, expensive, and impractical to use over a large region. Traditional weed control methods are no longer workable due to ~~the~~ rising industrialization and ~~urbanisation~~urbanization. Herbicidal weed control is ~~chosen~~ preferred~~due to~~for its higher effectiveness, lower cost, and shorter time commitment. Choosing the right herbicides for the infesting~~type of~~ weed ~~flora infesting the crop~~ is essential for effective weed control (Jyothi Basu *et al.*, 2020[a], 2020[b], 2020[c], 2021).~~In this view, the current study was undertaken to find~~Thus, we evaluated the efficacy of Triafamone 18.52% SCon weed dynamics and yield of direct sown rice.

MATERIALS AND METHODS

A field experiment was conducted on clay loam soils ~~of~~ at the Agricultural Research Station, Jangamaheswarapuram, Guntur Dist. Andhra Pradesh, India for two consecutive years (2017 -18 and 2018-19). There were nine treatments, as ~~given here under~~follows:~~.~~

List 1. List of treatment, Dose, and time of application.

Treatment	Dose (g ha^{-1})	Time of Application
T_1:Untreated control	-	-
T_2:Triafamone 18.52 SC	30	2- ~~to~~ 3 leaf stage of weed
T_3:Triafamone 18.52 SC	40	2- ~~to~~ 3 leaf stage of weed

T_4:Triafamone18.52 SC	50	2- ~~to~~ 3 leaf stage of weed
T_5:Triafamone18.52 SC	100	2- ~~to~~ 3 leaf stage of weed
T_6:Pyrazosulfuron ethyl 10% WP	15	2- ~~to~~ 3 leaf stage of weed
T_7:Cyhalofop Butyl 10% EC	80	2- ~~to~~ 3 leaf stage of weed
T_8:Farmer practice (two hand weedings)	-	20 ~~DAS~~ and 40 DAS
T_9:Weed free	-	-

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Triafamone belongs to the keto~~sulfonanilide~~ sulfonamideherbicides. In plants, Triafamone is taken up by leaves and roots and is very quickly converted into an intermediate form by reduction of the keto group. Contrary to rice, in weeds, a 2nd metabolite is formed by N-demethylation which,~~and this metabolite strongly~~ inhibits acetolactate synthase (ALS).

A seed rate of 50 kg ha^{-1} was adopted and the cultivar was 'Samba mahsuri (BPT-5204)'. Seeds were weighed separately for each plot and sown in solid rows in the furrows opened by line markers at 25 cm intervals. All the herbicides were sprayed by using a knapsack sprayer with a flat-fan nozzle at a spray volume of 500 l ha^{-1}.

The efficacy of different treatments on weeds was evaluated at crop maturity. Quadrates (0.25 m^2) were placed in each plot at random to determine the weed density. Weed seedlings within these quadrates were counted and the efficacy of weed control treatments was evaluated by comparing the density with the untreated control. Weeds were cut at ground level, washed with tap water, ~~oven~~ oven-dried at 70 ^{0}C for 48 hours, and then weighed for biomass. The weed control efficiency was calculated using the formula given by Tawaha*et al*. (2002). The data on weeds were transformed by square root transformation by adding one before being subjected to ANOVA (Gomez and Gomez 1984).

Weed control efficiency (WCE) indicates a ~~percent~~ reduction percentage in weed dry matter due to weed control treatments over unweeded control. Based on dry matter of weeds produced at 42 days after application the WCE was calculated ~~by using the following formula and expressed in percentage~~as follows (AICRPWC, 1988).

$$\text{WCE (\%)} = \frac{\text{DWC} - \text{DWT}}{\text{DWC}} \text{x} 100$$

Where,

DWC = Dry weight of weeds in unweeded control

DWT = Dry weight of weeds in the treated plot.

Results and Discussion

Weed Flora in Direct ~~sown~~ Sown Rice

The predominant 'weed species' that were observed in the experimental field during the investigation are *Echinochloacolonum*, *~~Echinochloa~~E.crusgalli*, *Dinerbaretroflexa*, *and Leptochloachinensis* (grasses), *Cyperusrotundus*, and*~~Cyperus~~ C.difformis* (sedges), *Eclipta alba*, *Ammaniabaccifera* and*Trianthemaportulacastrum* (~~broad~~ broad-leaved weeds).

However, ~~*Echinochloa*~~*E.colonum* was the most predominant weed among ~~all~~ the three groups at various stages of crop growth during both the years of study.Similar trend was close conformity of Ramesha *et al.* (2019) and MuraliArthanari(2023).

Weed Density(No. m^{-2})

~~Density~~ The density of weeds ~~were~~ wassignificantly (P<0.05) influenced by weed management treatments, and is presented in the corresponding tables (Tables1 to ~~Table~~ 4). Weed density was recorded ~~species~~ species-wise at 28 and 42 days ~~after~~ post-application.

~~a).~~ 28 days ~~after~~ post-herbicide application (28 DAA)

At 28 DAA the density of grasses (~~*Dinerba*~~*D.retroflexa)* sedges (~~*Cyperus*~~ *C.rotundus*and~~*Cyperus*~~ *C.difformis) and* ~~broad~~ broad-leaved weeds (~~*Eclipta*~~ *E.alba*, ~~*Ammania*~~*A.baccifera*, and~~*Trianthema*~~*T.portulacastrum)* were significantly (P<0.05) reduced in all the weed control treatments over weedy check. Among the ~~herbicide~~ herbicide-treated plots, the lowest weed density was recorded in ~~treatment~~ T_5~~(Triafamone 18.52 SC@ 100 g *a.i.* ha^{-1}at 2-3 leaf stage of weed)~~which was on par with ~~treatments~~ T_4~~(Triafamone 18.52 SC@ 50 g *a.i.* ha^{-1}at 2-3 leaf stage of weed)~~. The highest density of grasses was recorded ~~in weedy check~~ in ~~(~~T_1~~)~~ during ~~both~~ the years of study.

~~b).~~ 42 days ~~after~~ post-herbicide application (42 DAA)

The data on weed density of grasses, sedges, and ~~broad~~ broad-leaved weeds at 42 days ~~after~~ post-application is furnished in Tables1, 2, 3, and 4. ~~Significant~~ A significant (P<0.05) reduction in weed density of grasses was observed in ~~weed~~ weed-free treatment (T_9) compared to ~~all the~~ others~~weed management practices that also registered~~and a lesser population of weeds ~~over weedy check~~was observed in~~(~~T_1~~)~~ during both the years of study.

The lowest density of weeds among the herbicidal treatments (~~*Dinerba*~~*D.retroflexa*, ~~*Cyperus*~~ *C.rotundus*, ~~*Cyperus*~~ *C.difformis*, ~~*Eclipta*~~ *E.alba*, ~~*Ammania*~~*A.baccifera*, and~~*Trianthema*~~*T.portulacastrum*)was observed with T_5~~(Triafamone 18.52 SC @ 100 g *a.i.* ha^{-1}at 2-3 leaf stage of weed)~~followed by T_4~~(Triafamone 18.52 SC @ 50 g *a.i.* ha^{-1}at 2-3 leaf stage of weed)~~ which maintained parity with each other. Untreated control (T_1) resulted in the significantly (P<0.05) highest density of weeds ~~and was significantly higher than rest of the weed management practices~~ at 42 DAA during both the years of study. These findings were in agreement with ~~the views expressed by~~ Deivasigamani(2016[a]), Deivasigamani(2016[b]), and MuraliArthanari(2023).

Weed drymatter

Weed drymatter is an improved parameter to measure weed competition than weed density since it measures accurately the weed growth besides the resources depleted by the weeds.

~~Among all the weed management practices t~~The ~~treatment~~ T_9 categorized as ~~weed~~ weed-free exhibited the lowest weed drymatter at 42 DAA over the rest ~~of the treatments~~ and a significantly (P<0.05) higher dry weight of weed species was observed ~~under weedy check~~ ~~(~~in T_1~~)~~ compared to the rest ~~of the treatments~~ during both the years of study.

At 42 DAA,~~the treatment~~ T_5 ~~(Triafamone 18.52 SC @ 100 g *a.i.* ha^{-1}at 2-3 leaf stage of weed)~~registered significantly (P<0.05) the lowest ~~dry~~ dry-weight weeds compared to

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~~treatments~~ T_3, T_6, T_7, and T_1 but, was on a par with treatment T_4~~(Triafamone 18.52 SC @ 50 g *a.i.* ha^{-1} at 2-3 leaf stage of weed)~~. None of the treatments were comparable to ~~weed~~ weed-free in reducing the total dry weight of total weeds. However, all the weed management practices were significantly (P<0.05) superior to ~~weedy check~~ (T_1) in reducing the total dry weight of weeds.The results ~~are conformity with~~were following~~the findings of~~Deivasigamani (2016[b])

Weed control efficiency (%)

Weed control efficiency of various weed management practices calculated at 42 days ~~after~~ post-herbicide application during both the years of investigation are embodied in Table 7**.**At 42 DAA among the ~~herbicide~~ herbicide-treated plots, the highest weed control efficiency ~~of 62.69 and 64.85 per cent~~ was recorded by ~~the treatment~~ T_5~~(Triafamone 18.52 SC @ 100 g *a.i.* ha^{-1} at 2-3 leaf stage of weed)~~which was on ~~a~~ par with ~~treatment~~ T_4~~(Triafamone 18.52 SC @ 50 g *a.i.* ha^{-1} at 2-3 leaf stage of weed) (61.25 and 60.88 %)~~ but significantly (P<0.05) superior to the rest ~~of the treatments~~ during both ~~the~~ years ~~of study~~. Similar results were ~~also~~ reported byDeivasigamani(2016[b]) and Mohapatra*et al.* (2021).

Conclusions

~~On the basis of foregone studies, it is concluded that:~~

- The weed~~s~~ spectrum was mainly dominated by grasses followed by ~~broad~~ broad-leaf weeds and sedges in ~~Rice~~rice and all the weed management practices effectively controlled the grasses, ~~broad~~ broad-leaf weeds, and sedges.
- Among the herbicidal treatments grasses (~~*Dinerba*~~*D.retroflexa)* sedges (~~*Cyperus C.*~~*rotundus*and~~*Cyperus C.difformis)* and ~~broad~~ broad-leaved weeds (~~*Eclipta E.alba*~~, ~~*Ammania*~~*A.baccifera*, and~~*Trianthema*~~*T.portulacastrum)*~~was~~ were controlled effectively by Triafamone 18.52 SC~~@~~ at a rate of 100 g ~~*a.i.*~~ ha^{-1} at the 2-3 leaf stage of weed (T_5) followed by T_4 (Triafamone 18.52 SCat a rate of ~~@~~ 50 g ~~*a.i.*~~ ha^{-1} at 2-3 leaf stage of weed).

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Table 1. ~~Density~~ The density of weeds(No. m^{-2}) at different growth stages of direct seeded Rice as influenced by weed management practices during ~~*Rabi*~~*Spring*, 2017-18 and ~~*Khariffall*~~, 2018-19

Treatments	Dose (g *a.i.* ha^{-1})	*Echinochloacolonum* 28 DAA		*Echinochloacolonum* 42 DAA		*Leptochloachinensis* 28 DAA		*Leptochloachinensis* 42 DAA	
		2017-18	2018-19	2017-18	2018-19	2017-18	2018-19	2017-18	2018-19
T_1.Untreated (control)	-	7.86 (61.5)	6.61 (43.5)	8.69(75.5)	7.54(56.5)	3.00 (8.8)	2.44 (5.5)	3.64 (13.0)	3.20(9.8)
T_2. Council Prime (Triafamone 18.52 SC)	30	4.73 (22.0)	3.97 (15.5)	5.90 (34.8)	5.11 (26.0)	2.79 (7.5)	2.58 (6.3)	3.35 (11.0)	2.85 (12.3)
T_3. Council Prime (Triafamone 18.52 SC)	40	4.17(17.0)	3.44 (11.5)	5.11(26.5)	4.61 (21.3)	2.66 (6.8)	2.52 (6.0)	3.08 (9.3)	3.10 (9.3)
T_4. Council Prime (Triafamone 18.52 SC)	50	3.73 (13.7)	2.72 (7.3)	4.52(20.5)	3.68 (13.3)	2.29 (5.0)	2.44 (5.5)	2.83 (7.8)	3.03 (8.8)
T_5.Council Prime (Triafamone 18.52 SC)	100	3.21(10.0)	2.32 (5.3)	3.87(14.8)	3.47 (12.0)	2.09 (4.0)	1.98 (3.5)	3.09 (9.3)	2.62 (6.5)
T_6.Pyrazosulfuron ethyl 10% WP	15	5.21 (27.3)	4.41(19.3)	6.47(42.0)	5.52 (30.3)	2.77 (7.3)	2.32 (5.0)	3.33 (10.8)	3.02 (8.8)
T_7.Cyhalofop Butyl 10% EC	80	2.29(5.3)	1.99 (3.8)	3.03(9.0)	2.73 (7.3)	2.00 (3.8)	1.79 (2.8)	2.67 (7.0)	2.44 (5.5)
T_8.Farmer practice (two hand weedings)	-	2.34(5.3)	2.52 (6.0)	2.91(8.3)	2.94 (8.3)	1.18 (1.0)	1.48 (1.8)	1.26 (1.3)	1.84 (3.0)
T_9.Weed free	-	0.71 (0.0)	0.71 (0.0)	0.71(0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)
SEm+	-	0.31	0.26	0.39	0.27	0.21	0.16	0.23	0.30
CD (P = 0.05)	-	0.91	0.77	1.14	0.80	0.63	0.47	0.68	0.87

Note: Data transformed to √x+0.5 transformations. Figures in parentheses~~parenthesis~~ are original values

Table 2. ~~Density~~ The density of weeds(No. m^{-2}) at different growth stages of direct seeded Rice as influenced by weed management practices during ~~*Rabi*~~*spring*, 2017-18 and ~~*Khariffall*~~, 2018-19

Treatments	Dose (g *a.i.* ha^{-1})	*Dinebraretroflexa* 28 DAA		*Dinebraretroflexa* 42 DAA		*Cyperusrotundus* 28 DAA		*Cyperusrotundus* 42 DAA	
		2017-18	2018-19	2017-18	2018-19	2017-18	2018-19	2017-18	2018-19
T_1.Untreated (control)	-	2.86 (8.0)	2.62 (6.5)	3.49 (12.0)	3.33 (10.8)	4.25 (18.0)	3.39 (11.3)	5.23 (27.3)	4.54 (20.3)
T_2. Council Prime (Triafamone 18.52 SC)	30	1.87(3.3)	2.01 (3.8)	2.50(6.0)	2.62 (6.8)	3.45 (11.5)	2.58 (6.3)	4.19 (17.3)	3.23 (10.0)
T_3. Council Prime (Triafamone 18.52 SC)	40	1.61 (2.3)	1.56 (2.0)	2.23(4.8)	2.30 (5.0)	2.67 (7.0)	1.92 (3.5)	3.54 (12.5)	2.68 (7.0)
T_4. Council Prime (Triafamone 18.52 SC)	50	0.71 (0.0)	1.27 (1.3)	1.18(1.0)	1.55 (2.0)	2.18 (4.8)	1.76 (2.8)	2.93 (8.5)	2.27 (4.8)
T_5.Council Prime (Triafamone 18.52 SC)	100	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	2.45 (5.8)	1.70 (2.5)	2.68 (6.8)	2.36 (5.3)
T_6.Pyrazosulfuron ethyl 10% WP	15	2.42 (5.5)	2.52 (6.0)	3.48 (11.8)	3.02 (8.8)	4.00 (15.8)	3.12 (9.5)	5.06 (25.5)	3.90 (15.0)
T_7.Cyhalofop Butyl 10% EC	80	1.82 (3.0)	2.06 (4.0)	2.51 (6.3)	2.57 (6.3)	4.12(16.8)	3.31 (10.8)	5.14 (26.3)	4.21 (17.5)
T_8.Farmer practice (two hand weedings)	-	1.18 (1.0)	1.48 (1.8)	1.63 (2.3)	1.84 (3.0)	2.21 (4.5)	1.82 (3.0)	2.61 (6.5)	2.65 (7.0)
T_9.Weed free	-	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)
SEm+	-	0.20	0.19	0.24	0.20	0.29	0.22	0.28	0.23
CD (P = 0.05)	-	0.60	0.57	0.69	0.60	0.83	0.64	0.81	0.66

Note: Data transformed to √x+0.5 transformations. Figures in parentheses~~parenthesis~~ are original values

Table 3. ~~Density~~ The density of weeds(No. m^{-2}) at different growth stages of direct seeded Rice as influenced by weed management practices during ~~*Rabi*~~*spring*, 2017-18 and ~~*Khariffall*~~, 2018-19

Treatments	Dose (g *a.i.* ha^{-1})	*Cyperusdifformis* 28 DAA		*Cyperusdifformis* 42 DAA		*Eclipta alba* 28 DAA		*Eclipta alba* 42 DAA	
		2017-18	2018-19	2017-18	2018-19	2017-18	2018-19	2017-18	2018-19
T_1.Untreated (control)	-	3.04 (9.0)	2.51 (6.0)	3.65 (13.0)	3.15 (9.8)	3.17 (9.8)	2.46 (5.8)	3.89(15.0)	3.24 (10.3)
T_2. Council Prime (Triafamone 18.52 SC)	30	1.82 (3.0)	2.54 (6.0)	2.90 (8.3)	3.12 (9.3)	2.46 (5.8)	2.38 (5.3)	3.18 (9.8)	3.03 (8.8)
T_3. Council Prime (Triafamone 18.52 SC)	40	1.61 (2.3)	2.12 (4.3)	2.22 (4.8)	2.69 (7.0)	1.84 (3.5)	2.28 (5.0)	2.28 (5.3)	2.89 (8.0)
T_4. Council Prime (Triafamone 18.52 SC)	50	1.18 (1.0)	1.76 (2.8)	1.94 (3.5)	2.08 (4.0)	2.02 (4.0)	1.70 (2.5)	2.67 (7.0)	2.27 (4.8)
T_5.Council Prime (Triafamone 18.52 SC)	100	1.18 (1.0)	1.70 (2.5)	1.77 (2.8)	2.22 (4.5)	1.50 (2.0)	1.63 (2.3)	2.10 (4.8)	2.10 (4.0)
T_6.Pyrazosulfuron ethyl 10% WP	15	2.70 (7.3)	2.42 (5.5)	3.51 (12.3)	3.11 (9.5)	2.46 (6.0)	2.44 (5.5)	3.28 (10.5)	3.03 (8.8)
T_7.Cyhalofop Butyl 10% EC	80	2.62 (6.5)	2.56 (6.3)	3.36 (11.0)	3.06 (9.0)	2.79 (7.5)	2.42 (5.5)	3.58 (12.8)	2.98 (8.5)
T_8.Farmer practice (two hand weedings)	-	1.18 (1.0)	1.54 (2.0)	1.56 (2.0)	1.84 (3.0)	1.18 (1.0)	1.40 (1.5)	1.55 (2.3)	1.92 (3.3)
T_9.Weed free	-	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)
SEm+	-	0.24	0.21	0.27	0.22	0.27	0.20	0.32	0.19
CD (P = 0.05)	-	0.71	0.61	0.78	0.64	0.79	0.58	0.92	0.56

Note: Data transformed to √x+0.5 transformations. Figures in parentheses~~parenthesis~~ are original values

Table 4. ~~Density~~ The density of weeds(No. m^{-2}) at different growth stages of direct seeded Rice as influenced by weed management practices during ~~*Rabi*~~*spring*, 2017-18 and ~~*Khariffall*~~, 2018-19

Treatments	Dose (g *a.i.* ha^{-1})	*Ammanniabaccifera*		*Ammanniabaccifera*		*Trianthemaportulacastrum*		*Trianthemaportulacastrum*	
		28 DAA		42 DAA		28 DAA		42 DAA	
		2017-18	2018-19	2017-18	2018-19	2017-18	2018-19	2017-18	2018-19
T_1.Untreated (control)	-	2.33 (5.3)	2.44 (5.5)	3.04 (9.0)	2.77 (7.3)	3.10 (9.3)	2.49 (5.8)	3.97 (15.5)	3.12 (9.3)
T_2. Council Prime (Triafamone 18.52 SC)	30	1.84 (3.0)	1.98 (3.5)	2.66 (6.8)	2.44 (5.5)	2.18 (4.5)	1.82 (3.0)	3.17 (9.8)	2.51 (6.0)
T_3. Council Prime (Triafamone 18.52 SC)	40	1.59 (2.3)	1.89 (3.3)	2.31 (5.0)	2.35 (5.3)	2.04(4.0)	1.79 (2.8)	2.87 (8.3)	2.48 (5.8)
T_4. Council Prime (Triafamone 18.52 SC)	50	1.27 (1.3)	1.45 (1.8)	1.89 (3.3)	1.76 (2.8)	1.82 (3.0)	1.56 (2.0)	2.43 (5.8)	1.98 (3.5)
T_5.Council Prime (Triafamone 18.52 SC)	100	0.84 (0.3)	1.22 (1.0)	1.35 (1.5)	1.73 (2.5)	1.81 (3.0)	1.70 (2.5)	2.52 (6.0)	2.17 (4.3)
T_6.Pyrazosulfuron ethyl 10% WP	15	2.20 (4.5)	1.92 (3.3)	2.71 (7.0)	2.48 (5.8)	2.09 (4.0)	1.70 (2.5)	2.71 (7.0)	2.22 (4.5)
T_7.Cyhalofop Butyl 10% EC	80	2.13 (4.3)	2.36 (5.3)	3.06 (9.3)	2.79 (7.5)	2.73 (7.3)	2.25 (4.8)	3.28 (10.8)	2.71 (7.0)
T_8.Farmer practice (two hand weedings)	-	0.71 (0.0)	0.97 (0.5)	0.97 (0.5)	1.31 (1.3)	1.56 (2.0)	1.56 (2.0)	2.18 (4.3)	1.70 (2.5)
T_9.Weed free	-	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)
SEm+	-	0.21	0.17	0.24	0.19	0.23	0.15	0.27	0.16
CD (P = 0.05)	-	0.62	0.51	0.70	0.55	0.66	0.44	0.80	0.47

Note: Data transformed to √x+0.5 transformations. Figures in parentheses~~parenthesis~~ are original values

Table 5: ~~Dry~~ The dry weight of weeds (g.m$^{-2)}$ at 42 days after herbicide application of direct seeded Rice as influenced by weed management practices during ~~*Rabi*~~*spring*, 2017-18 and ~~*Khariffall*~~, 2018-19

Treatment	Dose (g *a.i.* ha^{-1})	*Echinochloacolonum*		*Leptochloachinensis*		*Dinebraretroflexa*		*Cyperusrotundus*	
		2017-18	**2018-19**	**2017-18**	**2018-19**	**2017-18**	**2018-19**	**2017-18**	**2018-19**
$T_{1.}$Untreated (control)	-	13.56 (183.41)	11.64 (135.31)	4.35 (19.04)	3.83 (14.60)	4.70 (23.25)	5.16 (26.42)	5.33 (28.50)	4.44 (19.29)
$T_{2.}$ Council Prime (Triafamone 18.52 SC)	30	8.03 (64.87)	7.35 (54.54)	3.70 (13.29)	3.94 (15.18)	3.37 (11.16)	3.61 (13.67)	3.86 (14.67)	3.14 (9.39)
$T_{3.}$ Council Prime (Triafamone 18.52 SC)	40	6.53 (42.60)	6.40 (41.23)	3.55 (12.36)	3.35 (10.82)	2.36 (5.46)	3.03 (8.98)	3.49 (11.80)	2.59 (6.47)
$T_{4.}$ Council Prime (Triafamone 18.52 SC)	50	5.18 (27.43)	4.79 (22.66)	3.11 (9.47)	3.38 (11.10)	1.92 (4.08)	2.07 (4.15)	2.72 (7.34)	2.03 (3.66)
$T_{5.}$Council Prime (Triafamone 18.52 SC)	100	4.18 (17.44)	4.37 (19.01)	3.05 (9.01)	2.87 (8.05)	0.71 (0.00)	0.71 (0.00)	2.41 (5.36)	2.33 (5.09)
$T_{6.}$Pyrazosulfuron ethyl 10% WP	15	8.81 (79.06)	7.85 (61.55)	3.31 (10.89)	3.47 (11.86)	4.20 (17.58)	4.08 (16.30)	5.67 (31.99)	4.21 (17.53)
$T_{7.}$Cyhalofop Butyl 10% EC	80	3.27 (10.73)	3.83 (14.64)	3.04 (9.13)	2.53 (6.01)	3.21 (10.81)	3.37 (11.15)	5.37 (29.79)	4.34 (18.78)
$T_{8.}$Farmer practice (two hand weedings)	-	2.64 (7.13)	3.58 (12.77)	1.28 (1.29)	1.95 (3.39)	1.79 (2.84)	2.12 (4.00)	2.35 (5.17)	2.49 (5.98)
$T_{9.}$Weed free	-	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)
SEm±	-	0.4718	0.3308	0.2262	0.2507	0.4052	0.2884	0.3316	0.2171
CD (P=0.05)	-	1.3772	0.9655	0.6603	0.7316	1.1826	0.8419	0.9680	0.6337

Note: *Data transformed to √x+0.5 transformations. Figures in ~~parenthesis~~ parentheses are original values.

Table 6: ~~Dry~~ The dry weight of weeds (g $m^{-2)}$ at 42 days after herbicide application of direct seeded Rice as influenced by weed management practices during~~*Rabi*~~*spring*, 2017-18 and ~~*Khariff*~~*fall*, 2018-19

Treatment	Dose (g *a.i.* ha^{-1})	*Cyperusdifformis*		*Eclipta alba*		*Ammanniabaccifera*		*Trianthemaportulacastrum*	
		2017-18	**2018-19**	**2017-18**	**2018-19**	**2017-18**	**2018-19**	**2017-18**	**2018-19**
$T_{1.}$Untreated (control)	-	6.09 (37.46)	4.26 (18.48)	4.63 (21.5)	3.99 (16.1)	4.87 (23.55)	3.78 (13.84)	5.87 (34.48)	4.86 (23.32)
$T_{2.}$ Council Prime (Triafamone 18.52 SC)	30	4.45 (19.44)	3.90 (14.75)	3.50 (11.8)	3.40 (11.2)	3.93 (15.18)	2.73 (7.02)	4.86 (23.26)	3.30 (10.72)
$T_{3.}$ Council Prime (Triafamone 18.52 SC)	40	3.76 (14.24)	3.46 (11.82)	2.96 (8.8)	3.31 (10.6)	3.25 (10.27)	2.60 (6.50)	4.01 (16.74)	3.34 (10.78)
$T_{4.}$ Council Prime (Triafamone 18.52 SC)	50	3.18 (10.12)	2.56 (6.50)	3.07 (9.6)	2.44 (5.5)	2.81 (8.13)	1.81 (2.85)	3.53 (12.81)	2.51 (5.95)
$T_{5.}$Council Prime (Triafamone 18.52 SC)	100	3.47 (11.97)	2.87 (7.87)	2.40 (6.5)	2.32 (5.0)	2.09 (4.60)	1.92 (3.21)	3.62 (12.74)	2.89 (7.90)
$T_{6.}$Pyrazosulfuron ethyl 10% WP	15	5.31 (28.26)	4.13 (17.32)	4.58 (20.5)	3.46 (11.6)	4.14 (17.79)	3.24 (10.04)	3.96 (15.49)	3.33 (11.02)
$T_{7.}$Cyhalofop Butyl 10% EC	80	5.48 (30.18)	3.95 (15.26)	4.15 (17.3)	3.60 (13.0)	4.45 (19.88)	3.81 (14.77)	4.84 (23.99)	4.05 (16.34)
$T_{8.}$Farmer practice (two hand weedings)	-	2.65 (6.71)	2.07 (3.80)	1.68 (2.8)	2.22 (4.6)	1.12 (0.94)	1.45 (1.63)	3.04 (8.79)	2.05 (3.86)
$T_{9.}$Weed free	-	0.71 (0.00)	0.71 (0.00)	0.71 (0.0)	0.71 (0.0)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)
SEm±	-	0.3807	0.3155	0.3840	0.2807	0.3937	0.2298	0.3797	0.2315
CD (P=0.05)	-	1.1112	0.9210	1.1208	0.8193	1.1491	0.6706	1.1083	0.6756

Note: *Data transformed to √x+0.5 transformations. Figures in parentheses~~parenthesis~~ are original values.

Table 7. ~~Dry~~ The dry weight of total weeds (g m^{-2}) and weed control efficiency (%)at 42 days after herbicide application of direct seeded Rice as influenced by weed management practices during ~~*Rabi*~~*spring*, 2017-18 and ~~*Khariffall*~~, 2018-19

Treatments	Dose (g a.i. ha^{-1})	*Dry weight of total weeds		**Weed control efficiency	
		42 DAA		42 DAA	
		2017-18	2018-19	2017-18	2018-19
$T_{1.}$Untreated control	-	19.23 (371.2)	16.35 (267.4)	0.00 (0.0)	0.00 (0.0)
$T_{2.}$ Council Prime (Triafamone 18.52 SC)	30	13.16 (137.5)	11.66 (136.4)	46.77 (53.1)	44.32 (48.8)
$T_{3.}$ Council Prime (Triafamone 18.52 SC)	40	11.05(122.2)	10.37 (107.2)	54.42 (65.9)	50.64 (59.8)
$T_{4.}$ Council Prime (Triafamone 18.52 SC)	50	9.22 (89.0)	7.89 (62.4)	60.88 (75.3)	61.25 (76.7)
$T_{5.}$Council Prime (Triafamone 18.52 SC)	100	8.23 (67.7)	7.49 (56.1)	64.58 (85.1)	62.69 (78.8)
$T_{6.}$Pyrazosulfuron ethyl 10% WP	15	14.83 (221.5)	12.53 (157.3)	38.96 (39.7)	39.85 (41.1)
$T_{7.}$Cyhalofop Butyl 10% EC	80	12.25 (151.8)	10.45 (110.0)	50.18 (58.8)	50.10 (58.7)
$T_{8.}$Farmer practice (two hand weedings)	-	6.01 (35.7)	6.31 (40.0)	71.76 (90.1)	67.42 (85.1)
$T_{9.}$Weed free	-	0.71 (0.0)	0.71 (0.0)	90.00 (100.0)	90.00 (100.0)
SEm+	-	0.61	0.33	2.07	1.39
CD (P = 0.05)	-	1.79	0.96	6.06	4.04

Note: *Data transformed to √x+0.5 transformations. Figures in parenthesis are original values

** Data transformed to arc sine transformations. Figures in parentheses~~parenthesis~~ are original values