

## **Chapter-IV**

# **EXPERIMENTAL FINDINGS**

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In this chapter an attempt has been made to present the experimental results obtained during the course of field investigation. Statistically analyzed data have been organized in relevant tables. Graphic illustrations have also been provided wherever necessary. The observed results, as supported by the available statistics, have been described to project a broad and clear variation exhibited by the weed, soil behavior due to different methods of rice planting and weed management practices. Results of the field experiment conducted consecutively in two years have been described in this chapter.

### **Growth and Development Studies:**

#### **1. Plant Height:**

The data regarding plant height at various crop growth stages were analyzed statistically and the results have been presented in table 4.1. The main effects of various treatments was illustrated graphically in Fig.3. The analysis of variance have been given in Appendix-I, Ia for reference.

**Table 4.1 Effect of crop establishment and weed control practices on the plant height at various crop growth stages of rice in both years.**

Treatments	2000 Plant height (cm) at		
	Panicle Emergence	Flowering	Maturity
<b>A. Crop establishment</b>			
T <sub>1</sub> Transplanting puddled	53.78	89.32	112.22
T <sub>2</sub> Transplanting unpuddled	52.50	87.12	109.82
T <sub>3</sub> Direct seeding unpuddled	51.07	84.74	106.83
SE (d)	0.58	10.12	1.23
CD (P=0.05)	1.42	2.73	3.01
<b>B. Weed Control Practices</b>	51.66	85.55	107.93
W <sub>1</sub> Chemical weed control	52.19	86.58	108.30
W <sub>2</sub> Stale Seed bed	53.03	88.00	110.95
W <sub>3</sub> Stale seed bed followed by Chemical weed control	53.41	88.61	111.70
W <sub>4</sub> Stale Seed bed followed by hand weeding	54.32	90.13	113.62
W <sub>5</sub> Chemical weed control followed by hand weeding	55.14	91.56	115.41
W <sub>6</sub> Weed free check	47.41	78.88	99.47
W <sub>7</sub> Unweeded check	1.51	2.85	3.10
SE (d)	3.03	5.71	6.22
CD (P=0.05)	1.57	2.85	3.01
Interaction	N.S	N.S	N.S

Treatments		2001		
		Plant height (cm) at		
A. Crop establishment		Panicle Emergence	Flowering	Maturity
T <sub>1</sub>	Transplanting puddled	52.35	86.86	109.52
T <sub>2</sub>	Transplanting unpuddled	50.60	83.97	105.85
T <sub>3</sub>	Direct seeding unpuddled	49.89	82.79	104.36
SE (d)		0.51	0.97	1.05
CD (P=0.05)		1.24	2.39	2.58
B. Weed Control Practices				
W <sub>1</sub>	Chemical weed control	49.84	82.71	104.22
W <sub>2</sub>	Stale Seed bed	50.53	83.86	105.73
W <sub>3</sub>	Stale seed bed followed by Chemical weed control	51.52	85.49	107.85
W <sub>4</sub>	Stale Seed bed followed by hand weeding	52.18	86.58	109.14
W <sub>5</sub>	Chemical weed control followed by hand weeding	52.87	87.71	110.57
W <sub>6</sub>	Weed free check	53.61	88.98	112.61
W <sub>7</sub>	Unweeded check	46.07	76.45	96.37
SE (d)		1.32	2.53	2.54
CD (P=0.05)		2.65	5.08	5.09
Interaction		N.S	N.S	N.S

**A. Effect of crop establishment:**

Perusal of the results clearly indicate that the plant height (cm) were significantly reflected with various planting methods and in transplanting method in puddled field was significantly increased plant height (cm) followed by transplanting in unpuddled field over direct seeding in unpuddled field upto the maturity of the rice crop in respective years of field experimentation. The same trend was noticed in both the years.

**B. Effect of weed control practices:**

It is evident from the result table 4.1 showed that the various weed control practices were significantly influenced the plant height (cm) from panicle emergence upto the maturity of the rice crop and with the weed free check ( $W_6$ ) followed by chemical weed control and hand weeding of weed control was found significantly highest plant height from panicle emergence upto the maturity of the rice crop. It is also clear from the result table 4.2 showed that the unweeded check was observed significantly lowest plant height. The same results also observed in both the years of field experimentation.

## 2. Number of Shoots/M<sup>2</sup>:

The data regarding number of shoots/m<sup>2</sup> in various treatments combination were tabulated and analyzed statistically and the results have been presented in Table 4.2. The main effects of sowing methods and various weed control practices has been also illustrated graphically in Fig.4. The analysis of variance have been given in Appendix-II and III for reference.

**Table 4.2 Effect of crop establishment and weed control practices on the number of shoots/m<sup>2</sup> at various crop growth stags of rice in both years.**

Treatments		2000		
		Panicle Emergence	Flowering	Maturity
<b>A. Crop establishment</b>				
T <sub>1</sub>	Transplanting puddled	276.80	307.73	276.21
T <sub>2</sub>	Transplanting unpuddled	269.10	304.37	270.23
T <sub>3</sub>	Direct seeding unpuddled	261.76	295.91	262.13
	SE (d)	2.37	3.37	2.62
	CD (P=0.05)	5.80	8.24	6.42
<b>B. Weed Control Practices</b>				
W <sub>1</sub>	Chemical weed control	263.93	298.07	264.83
W <sub>2</sub>	Stale Seed bed	267.57	294.33	268.90
W <sub>3</sub>	Stale seed bed followed by Chemical weed control	271.93	307.43	273.13
W <sub>4</sub>	Stale Seed bed followed by hand weeding	273.97	309.70	275.37
W <sub>5</sub>	Chemical weed control followed by hand weeding	278.53	314.83	279.87
W <sub>6</sub>	Weed free check	283.10	320.33	284.80
W <sub>7</sub>	Unweeded check	243.40	274.00	239.77
	SE (d)	6.31	6.80	6.81
	CD (P=0.05)	12.67	13.64	13.66
	Interaction	N.S.	N.S.	N.S.

Treatments		2001		
		Panicle Emergence	Flowering	Maturity
<b>A. Crop establishment</b>				
T <sub>1</sub>	Transplanting puddled	268.13	300.06	269.18
T <sub>2</sub>	Transplanting unpuddled	259.30	292.91	260.07
T <sub>3</sub>	Direct seeding unpuddled	255.64	289.11	256.71
	SE (d)	2.19	2.62	2.33
	CD (P=0.05)	5.35	6.42	5.71
<b>B. Weed Control Practices</b>				
W <sub>1</sub>	Chemical weed control	255.50	285.25	256.70
W <sub>2</sub>	Stale Seed bed	259.03	293.03	260.27
W <sub>3</sub>	Stale seed bed followed by Chemical weed control	264.07	294.82	265.17
W <sub>4</sub>	Stale Seed bed followed by hand weeding	267.57	302.67	268.83
W <sub>5</sub>	Chemical weed control followed by hand weeding	270.97	306.53	272.23
W <sub>6</sub>	Weed free check	274.87	311.67	278.60
W <sub>7</sub>	Unweeded check	235.17	264.23	232.13
	SE (d)	5.82	5.63	6.06
	CD (P=0.05)	11.68	11.29	12.14
	Interaction	N.S	N.S	N.S

**A. Effect of crop establishment:**

It is evident from the result table 4.2 showed that the various planting methods of rice were significantly influence the

number of shoots/m<sup>2</sup> in both years of field trial and with the trying the rice transplanted in puddled soil was produced significantly more numbers of shoots/m<sup>2</sup> from panicle stage up to the maturity of the rice crop followed transplanting in unpuddled soil over direct seeding in upuddled soil. The result table 4.2 also showed that the direct seeding in unpuddled soil registered significantly lowest number of shoot/m<sup>2</sup> from pencil stage upto the maturity of the rice crop in respective years of field experimentation respectively.

#### **B. Effect of weed control practices:**

It is clear from the result table 4.2 showed that the different weed control practices significantly reflected the number of shoots/m<sup>2</sup> form pencil stage upto the maturity of the Basmati rice in both years of field trial and the application of weed free (No weeds) was produced significantly highest number of shoots/m<sup>2</sup> followed by (W<sub>5</sub>) chemical weed control followed by hand weeding (W<sub>4</sub>) stale seed bed following by hand weeding (W<sub>3</sub>) stale seed bed followed by chemical weed control over stale seed bed, chemical weed control and un weeded check in to the year of field trial. The result table 4.2 also clear the un weeded check (control) was registered significantly to west number of shoots/m<sup>2</sup> in both the years of field trial.

### C. Dry matter Accumulation:

The data regarding at various succeeding growth of Basmati rice were tabulated and analyzed statistically. The results have been presented in Table 4.3 and the main effects of planting methods and various weed control practice was also depicted by graphically in Fig. 5. The analysis of variance have been given in Appendix IV and V<sup>th</sup> for reference.

**Table 4.3 Effect of crop establishment and weed control practices on the dry matter accumulation at various crop growth stages in both the years.**

Treatments	2000		
	Dry matter accumulation g/m <sup>2</sup> at		
A. Crop establishment	Panicle	Flowering	Maturity
T <sub>1</sub> Transplanting puddled	213.30	406.11	866.29
T <sub>2</sub> Transplanting unpuddled	208.16	396.11	846.07
T <sub>3</sub> Direct seeding unpuddled	202.69	386.31	823.33
SE (d)	2.63	6.02	10.08
CD (P=0.05)	6.44	14.72	24.68
B. Weed Control Practices			
W <sub>1</sub> Chemical weed control	205.03	389.53	831.77
W <sub>2</sub> Stale Seed bed	207.30	393.87	841.20
W <sub>3</sub> Stale seed bed followed by Chemical weed control	210.53	400.37	855.00
W <sub>4</sub> Stale Seed bed followed by hand weeding	212.13	403.33	860.80
W <sub>5</sub> Chemical weed control followed by hand weeding	215.57	410.13	875.67
W <sub>6</sub> Weed free check	219.17	416.83	890.19
W <sub>7</sub> Unweeded check	186.90	356.87	761.97
SE (d)	6.91	15.15	29.68
CD (P=0.05)	13.86	30.37	59.51
Interaction	N.S	N.S	N.S



Treatments	2001		
	Dry matter accumulation g/m <sup>2</sup> at Panicle	Flowering	Maturity
<b>A. Crop establishment</b>			
T <sub>1</sub> Transplanting puddled	207.81	396.23	843.90
T <sub>2</sub> Transplanting unpuddled	200.90	381.87	815.82
T <sub>3</sub> Direct seeding unpuddled	198.21	376.49	804.24
SE (d)	1.99	5.27	7.44
CD (P=0.05)	4.88	12.88	18.22
<b>B. Weed Control Practices</b>			
W <sub>1</sub> Chemical weed control	198.07	376.50	803.47
W <sub>2</sub> Stale Seed bed	200.60	381.57	814.83
W <sub>3</sub> Stale seed bed followed by Chemical weed control	204.90	389.17	830.83
W <sub>4</sub> Stale Seed bed followed by hand weeding	207.39	393.87	841.37
W <sub>5</sub> Chemical weed control followed by hand weeding	210.13	399.40	852.63
W <sub>6</sub> Weed free check	213.40	405.67	865.49
W <sub>7</sub> Unweeded check	181.70	345.54	740.67
SE (d)	5.19	14.13	21.78
CD (P=0.05)	10.40	28.34	43.66
Interaction	N.S	N.S	N.S

#### **A. Effect of crop establishment:**

Perusal of the result table 4.3 showed that the various methods of planting of Basmati rice significantly affected the dry matter accumulation (g/m<sup>2</sup>) from Panicle growth stage upto

the maturity stage of rice crop in respectively years of field trials and in the rice crop was transplanted in puddled soil was obtained significantly more dry matter g/m<sup>2</sup> from panicle stage upto the maturity of the rice crop followed by transplanted crop in unpuddled soil over direct seeding in unpuddled soil in both the years of field trial.

#### **B. Effect of weed control practices:**

It is evident from the result table 4.3 showed that the various weed control practices significantly reflected the dry matter accumulation in both the years of field trial and with the (W<sub>6</sub>) weed free check was noted significantly highest dry matter from panicle stage upto the maturity of the rice crop in respective years of field trial followed by (W<sub>5</sub>) chemical weed control followed by hand weeding (W<sub>4</sub>), stale seed bed followed by hand weeding (W<sub>3</sub>), stale seed bed followed by chemical weed control and (W<sub>2</sub>) stale seed bed method over chemical (W<sub>1</sub>) and unweeded check (W<sub>7</sub>). The result table 4.3 also clearly indicate that unweeded check (W<sub>7</sub>) was produced significantly lowest dry matter/m<sup>2</sup> from panicle stage upto the maturity of the rice crop in the both years of field experimentation.

## B. DEVELOPMENT STUDIES:

### 1. Number of Days taken to Panicle emergence:

The data regarding to number of days taken to panicle emergence was tabulated and analyzed statistically. The results have been presented result Table 4.4. The main effects of various planting methods and different weed control practices have been illustrated by graphically in Fig. 6 and the analysis of variance has been given in Appendix-VI for reference.

**Table 4.4 Effect of crop establishment and weed control practices on the days taken to panicle emerge of Basmati rice in both the years.**

Treatments	Days taken to panicle emergence	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	74.43	72.71
T <sub>2</sub> Transplanting unpuddled	72.57	71.00
T <sub>3</sub> Direct seeding unpuddled	70.57	69.29
SE (d)	0.36	0.47
CD (P=0.05)	0.89	1.12
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	71.00	70.00
W <sub>2</sub> Stale Seed bed	72.00	70.67
W <sub>3</sub> Stale seed bed followed by Chemical weed control	74.00	72.00
W <sub>4</sub> Stale Seed bed followed by hand weeding	75.67	73.33
W <sub>5</sub> Chemical weed control followed by hand weeding	75.00	74.00
W <sub>6</sub> Weed free check	76.00	74.67
W <sub>7</sub> Unweeded check	64.00	62.33
SE (d)	0.95	0.65
CD (P=0.05)	1.91	1.29
Interaction	N.S	N.S

### **A. Effect of crop establishment:**

It is clear from the result table 4.4 that various planting methods of Basmati rice the T<sub>1</sub> (Transplanting in Puddled soil) was delay the time to panicle emergence over (T<sub>2</sub>) rice was transplanted in unpuddled soil and (T<sub>3</sub>) direct seeding in unpuddled soil. It is evident from the result Table 4.4 showed that the (T<sub>3</sub>) direct seeding in unpuddled soil was significantly emergence the panicle in Basmati rice in the both years of field experimentation.

### **B. Effect of weed control practices:**

The overall effect of various weed control practices on days taken to panicle emergence have been presented in the result Table 4.4 showed that the various weed control practices significantly influenced the days taken to panicle emergence in respective years of field trial and the (W<sub>6</sub>) weed free check weed control practice delayed the panicle emergence followed by (W<sub>4</sub>) stale seed bed followed by hand weeding (W<sub>5</sub>) chemical weed control followed by hand weeding and (W<sub>3</sub>) stale seed bed followed by chemical weed control respectively in respective years of field trial over (W<sub>2</sub>) stale seed bed (W<sub>1</sub>) chemical weed control and (W<sub>7</sub>) un weeded check. The same results have been

achieved in 2002. Stale seed bed (W<sub>2</sub>) and chemical weed control was found at par but both the weed control practices significantly more time taken to panicle emergence in the both the years of field trial.

## 2. Number of Days taken to 50% flowering:

The data regarding for days taken to 50% flowering were tabulated and analyzed statistically. The results have been presented in Table 4.5 and the main effects of planting methods and weed control practices also depicted in Fig. 7. The analysis of variance has been given in appendix-VII of both the years for reference.

**Table 4.5 Effect of crop establishment and weed control practices on taken to 50% flowering of Basmati rice for both the years.**

Treatments	Days taken to 50% flowering	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	97.71	96.14
T <sub>2</sub> Transplanting unpuddled	96.00	94.43
T <sub>3</sub> Direct seeding unpuddled	93.71	92.14
SE (d)	0.35	0.29
CD (P=0.05)	0.86	0.71
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	94.00	92.33

W <sub>2</sub>	Stale Seed bed	95.33	93.33
W <sub>3</sub>	Stale seed bed followed by Chemical weed control	96.33	94.33
W <sub>4</sub>	Stale Seed bed followed by hand weeding	97.33	95.69
W <sub>5</sub>	Chemical weed control followed by hand weeding	96.67	95.69
W <sub>6</sub>	Weed free check	98.33	97.00
W <sub>7</sub>	Unweeded check	92.67	91.33
	SE (d)	0.91	0.76
	CD (P=0.05)	1.82	1.52
	Interaction	N.S	N.S

#### **A. Effect of crop establishment:**

It is evident from the result table 4.5 showed that the different methods of rice planting significantly reflected the 50% flowering time in the both the years of field trial and with transplanting in puddled soil registered significantly more time taken and delayed the 50% flowering over transplanting in unpuddled soil and direct seeding in unpuddle soil in both the years of experimentation. The result table also revealed that the direct seeding in unpuddled soil the Basmati rice early flowering in the both the years of field trial.

## **B. Effect of weed control practices:**

It is clear from the results Table 4.5 shown that various weed control practices were significantly influenced the time taken to 50% flowering in the both the field trial and with the applying weed free check was delayed the time taken to 50% flowering stale seed bed followed by hand weeding over chemical weed control followed by hand weeding and stale seed bed followed by chemical weed control, but they are per with in over stale seed bed, chemical weed control over un weeded check respectively in the both the years of field trial. The unweeded check was noted significantly early 50% flowering in the years of field investigation.

## **3. Number of Days taken to Maturity:**

The data regarding to time taken to maturity of Basmati rice tabulated and analyzed statistically and the results have been presented in Table 4.6. The main effects of various crop establishment and different weed control practices also illustrated by graphically in Fig. 8. The analysis of variance have been given in Appendix-VIII for the both the years of field investigation for reference.

**Table 4.6 Effect of different crop establishment and weed control practices on time taken to maturity of Basmati rice of both the years.**

Treatments	Days taken to Maturity	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	132.86	131.57
T <sub>2</sub> Transplanting unpuddled	131.29	129.71
T <sub>3</sub> Direct seeding unpuddled	130.00	129.32
SE (d)	0.64	0.59
CD (P=0.05)	1.57	1.45
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	129.33	128.67
W <sub>2</sub> Stale Seed bed	132.00	130.33
W <sub>3</sub> Stale seed bed followed by Chemical weed control	133.00	131.33
W <sub>4</sub> Stale Seed bed followed by hand weeding	132.00	130.67
W <sub>5</sub> Chemical weed control followed by hand weeding	133.00	132.00
W <sub>6</sub> Weed free check	133.00	132.00
W <sub>7</sub> Unweeded check	127.00	126.42
SE (d)	1.67	1.53
CD (P=0.05)	3.34	3.07
Interaction	N.S	N.S



#### **A. Effect of crop establishment:**

It is evident from the result table 4.6 showed that the different crop establishment of Basmati rice were significantly affect the maturity time in the both the years of field investigation and in direct seeding in unpuddled soil was nature early and it was significantly lowest time taken to maturity of Basmati rice over transplanting rice in unpuddled soil and rice was planted in puddled soil respectively in both the years of field investigation. The result table also indicate that the Basmati rice was transplanted in puddled soil delayed the maturity significantly in the both the years of field trial.

#### **B. Effect of weed control practices:**

The result Table 4.6 reveal that the various weed control practices applying in Basmati rice significantly reflected the time taken to maturity in both the years of field investigation and the weed free check was significantly delayed the maturity time followed the stale seed bed followed by chemical weed control, chemical weed control followed by hand weeding stale seed bed followed by hand weeding and stale seed bed over chemical weed control and un weeded check respectively in the

both the years of field investigation. The result table also reveal that the unweeded check significantly lowest (early mature) time taken as compared to rest weed control practices in the both the years of field experimentation.

**C. Harvest Studies:**

**1. Number of Panicles/m<sup>2</sup>:**

The data regarding to number of Panicles/m<sup>2</sup> were tabulated and analyzed statistically and the results have been presented in Table 4.7. The main effects of different crop establishment and various weed control practices have been illustrated graphically in Fig. 9. The analysis of variance table of respective years have been given in Appendix-IX for reference.

**Table 4.7 Effect of different crop establishment and various weed control practices on number of panicles/m<sup>2</sup> of Basmati rice of both the years.**

Treatments	Number of Panicles/m <sup>2</sup> of Basmati rice	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	240.57	239.43
T <sub>2</sub> Transplanting unpuddled	239.00	236.50
T <sub>3</sub> Direct seeding unpuddled	236.29	234.29
SE (d)	1.32	1.29
CD (P=0.05)	3.24	3.14

## B. Weed Control Practices

W <sub>1</sub>	Chemical weed control	238.00	235.17
W <sub>2</sub>	Stale Seed bed	239.67	238.00
W <sub>3</sub>	Stale seed bed followed by Chemical weed control	242.33	240.33
W <sub>4</sub>	Stale Seed bed followed by hand weeding	243.33	241.67
W <sub>5</sub>	Chemical weed control followed by hand weeding	243.67	242.67
W <sub>6</sub>	Weed free check	245.67	244.00
W <sub>7</sub>	Unweeded check	217.67	215.33
	SE (d)	3.45	3.70
	CD (P=0.05)	6.92	7.41
	Interaction	N.S	N.S

## A. Effect of crop establishment:

It is clear from the results table 4.7 showed that the various crop establishment significantly influenced the number of panicles/m<sup>2</sup> of Basmati rice in the two respective years of field experimentation and with the rice transplanted in puddled soil was obtained significantly highest number of panicles/m<sup>2</sup> over the rice transplanted in unpuddled soil and direct seeding in unpuddled soil respectively in the respective years of yield investigation respectively the result table also indicate that the direct seeding in unpuddled soil was found significantly lowest number of panicles/m<sup>2</sup> as compared to rest crop establishment.

## **B. Effect of Weed control Practices:**

It is evident from the result table 4.7 showed that the various weed control practices were significantly reflected the number of panicles/m<sup>2</sup> in the both the years of field investigation and the treatment weed free check was noted the significantly maximum number of panicles/m<sup>2</sup> in the both the years of field trial followed by chemical weed control followed by hand weeding, stale seed bed followed by hand weeding and stale seed bed followed by chemical weed control over stale seed bed, chemical weed control and unweeded check in the both years of field investigation. The result table also showed that the unweeded check was observed significantly lowest number of panicles/m<sup>2</sup> in the respective years of field experimentation.

## **2. Panicle Length cm:**

The data regarding panicle length (cm) of Basmati rice were tabulated and analyzed statistically and the results have been presented in Table 4.8. The main effects of different crop establishment and various weed control practices depicted graphically in Fig. 10. The analysis of variance table have been given in Appendix-X for reference.

**Table 4.8 Effect of different crop establishment and various weed control practices on panicle length (cm) of Basmati rice in both the years.**

Treatments	Panicles length (cm)	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	29.20	28.61
T <sub>2</sub> Transplanting unpuddled	28.50	27.94
T <sub>3</sub> Direct seeding unpuddled	27.73	27.18
SE (d)	0.26	0.23
CD (P=0.05)	0.64	0.56
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	28.05	27.49
W <sub>2</sub> Stale Seed bed	28.34	27.77
W <sub>3</sub> Stale seed bed followed by Chemical weed control	28.79	28.22
W <sub>4</sub> Stale Seed bed followed by hand weeding	29.00	28.42
W <sub>5</sub> Chemical weed control followed by hand weeding	29.49	28.91
W <sub>6</sub> Weed free check	29.94	29.35
W <sub>7</sub> Unweeded check	25.74	25.21
SE (d)	0.68	0.59
CD (P=0.05)	1.38	1.19
Interaction	N.S	N.S

**A. Effect of crop establishment:**

It is evident from the result table 4.8 showed that the different crop establishment was significantly influenced the panicle length in the respective years of field trial and the Basmati rice transplanted in puddled soil significantly increased the panicle length over when Basmati rice

transplanted in unpuddled soil or direct seeding in unpuddled soil respectively in the respective years of field experimentation.

#### **B. Effect of weed control practices:**

It is clear from the result table 4.8 that the various weed control practices were significantly reflected the panicle length of Basmati rice in the both the years of field trial and the weed free check was registered significantly highest panicle length followed by chemical weed control followed by hand weeding, stale seed bed followed by hand weeding and stale seed bed followed by chemical weed control over stale seed bed, chemical weed control and unweeded check respectively in the respective years of field trial. The result table also indicate that the unweeded check was produced significantly lowest panicle length in the both the years of field trial.

#### **3. Number of Grains/panicle:**

The data regarding number of seeds per panicle were tabulated and analyzed statistically and the result have been presented in Table 4.9. The main effect of different crop establishment and various weed control practices also illustrated by graphically Fig. 11. The analysis of variance table have been given in Appendix-XI for reference.

**Table 4.9 Effect of different crop establishment and various weed control practices on number of grains per panicle of Basmati rice in both the years.**

A. Crop establishment	Treatments	Number of grains per panicle	
		2000	2001
	T <sub>1</sub> Transplanting puddled	121.00	118.61
	T <sub>2</sub> Transplanting unpuddled	119.57	118.28
	T <sub>3</sub> Direct seeding unpuddled	118.00	116.87
	SE (d)	0.58	0.61
	CD (P=0.05)	1.43	1.48
<b>B. Weed Control Practices</b>			
	W <sub>1</sub> Chemical weed control	117.00	115.33
	W <sub>2</sub> Stale Seed bed	119.00	118.08
	W <sub>3</sub> Stale seed bed followed by Chemical weed control	121.00	119.69
	W <sub>4</sub> Stale Seed bed followed by hand weeding	122.67	120.67
	W <sub>5</sub> Chemical weed control followed by hand weeding	123.67	121.33
	W <sub>6</sub> Weed free check	126.00	124.33
	W <sub>7</sub> Unweeded check	107.33	106.00
	SE (d)	1.48	1.34
	CD (P=0.05)	2.97	2.69
	Interaction	N.S	N.S

**A. Effect of crop establishment:**

It is evident from the result table 4.9 showed that the different crop establishment was significantly influenced the number of grains per panicle of Basmati rice in respective years of filed trial and the Basmati rice transplanted in puddled soil was registered significantly more number of grains per panicle

over direct seeding in unpuddled soil in the respective years of field investigation.

#### **B. Effect of weed control practices:**

The over all effect of various weed control practices on number of grains per panicle have been presented in Table 4.9. It is apparent from the table that the various weed control practices were significantly reflected the number of grains per panicle in respective years of field trial and with the using weed free check was observed significantly more grains per panicle in both the years followed by chemical weed control followed by hand weeding, stale seed bed followed by hand weeding and stale seed bed followed by chemical weed control over stale seed bed, chemical weed control and un weeded check. The unweeded check in both the years of field trial was produced significantly lowest number of grains per panicle.

#### **4. Grain weight per panicle (g):**

The data regarding to grain weight per panicle were tabulated and analyzed statistically and the results have been presented in Table 4.10. The main effect of different crop establishment and various weed control practices also depicted



graphically in Fig. 12. The analysis of variance table have been given in Appendix-XII for reference

**Table 4.10 Effect of different crop establishment and various weed control practices on grain weight per panicle of Basmati rice in both years.**

A. Crop establishment	Treatments	Grain weight per panicle (g)	
		2000	2001
	T <sub>1</sub> Transplanting puddled	1.588	1.556
	T <sub>2</sub> Transplanting unpuddled	1.573	1.553
	T <sub>3</sub> Direct seeding unpuddled	1.550	1.537
	SE (d)	0.010	0.007
	CD (P=0.05)	0.024	0.017
<b>B. Weed Control Practices</b>			
	W <sub>1</sub> Chemical weed control	1.537	1.513
	W <sub>2</sub> Stale Seed bed	1.563	1.543
	W <sub>3</sub> Stale seed bed followed by Chemical weed control	1.590	1.570
	W <sub>4</sub> Stale Seed bed followed by hand weeding	1.613	1.587
	W <sub>5</sub> Chemical weed control followed by hand weeding	1.623	1.593
	W <sub>6</sub> Weed free check	1.657	1.637
	W <sub>7</sub> Unweeded check	1.410	1.397
	SE (d)	0.27	0.017
	CD (P=0.05)	0.054	0.035
	Interaction	N.S	N.S

**A. Effect of crop establishment:**

It is evident from the result table 4.10 showed that the different crop establishment were significantly affected the grain weight per panicle in respective years of field trial of Basmati rice and the rice crop was transplanted in puddled soil was

significantly increased the grain weight per panicle in both the years followed by the rice crop transplanted in unpuddled soil over direct seeding in unpuddled soil in both the years of field investigation.

#### **B. Effect of weed control practices:**

Perusal of the result table 4.10 showed that the various weed control practices adopted in Basmati rice were significantly influenced the grain weight per panicle in respective years of field trial and the weed free check treatment registered significantly higher grain weight in the both the years of field trial followed by chemical weed control by hand weeding, stale seed bed followed by hand weeding and stale seed bed followed by chemical weed control practices over stale seed bed, chemical weed control method and un weeded check in the both the years of field experimentation. The result table also showed that the unweed check was observed significantly lowest grain weight per panicle in respective years of field trial.

#### **5. 1000, grain weight (g):**

The data regarding 1000, grain weight were tabulated and analyzed statistically and the results have been given in result Table 4.11. The main effect of different crop establishment and

various weed control practices also illustrate by graphically in Fig. 13. The analysis of variance table given in appendix-XIII for reference.

**Table 4.11 Effect of different crop establishment weed control practices on 1000, grain weight (g) Basmati rice in both years.**

Treatments	1000, grain weight (g)	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	21.18	21.09
T <sub>2</sub> Transplanting unpuddled	20.67	20.59
T <sub>3</sub> Direct seeding unpuddled	20.11	20.02
SE (d)	0.17	0.14
CD (P=0.05)	0.41	0.35
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	20.34	20.26
W <sub>2</sub> Stale Seed bed	20.55	20.46
W <sub>3</sub> Stale seed bed followed by Chemical weed control	20.88	20.79
W <sub>4</sub> Stale Seed bed followed by hand weeding	21.04	20.94
W <sub>5</sub> Chemical weed control followed by hand weeding	21.39	21.30
W <sub>6</sub> Weed free check	21.72	21.63
W <sub>7</sub> Unweeded check	18.67	18.56
SE (d)	0.44	0.36
CD (P=0.05)	0.87	0.72
Interaction	N.S	N.S

**A. Effect of crop establishment:**

It is clear from the result table 4.11 showed that the different crop establishment were significantly reflected the test weight of Basmati rice in respective years of field trial and with

the using the rice transplanted in puddled soil over the rice transplanted in unpuddled soil and direct seeding in unpuddled soil respectively in the respective years of field trial.

#### **B. Effect of weed control practices:**

Perusal of the result table 4.11 showed that the various weed control practice were significantly affected the test weight of Basmati rice in both the years of field trail and the applying weed free treatment was found significantly superior followed by chemical weed control followed by hand weeding and stale seed bed followed by hand weeding treatment over stale seed bed followed by chemical weed control, stale seed bed, chemical weed control treatment and un weeded check. The result table clearly showed that the un weeded check treatment was found significantly inferior test weight of Basmati rice in both the years of field experimentation.

#### **D. YIELDS STUDIES:**

##### **1. Biomass yield (q/ha)**

The data regarding biological yield (q/ha) of Basmati rice were tabulated and analyzed statistically and the results have been presented in Table 4.12. The main effects of different crop establishment and various weed control practices were also illustrated by graphically in Fig. 14. The analysis of variance table have been given in Appendix-XIV for reference.

**Table 4.12 Effect of different crop establishment and various weed control practices on biological yield (q/ha) of Basmati rice in both the years.**

Treatments	Biological yield (q/ha)	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	84.03	79.90
T <sub>2</sub> Transplanting unpuddled	82.58	77.33
T <sub>3</sub> Direct seeding unpuddled	80.43	75.39
SE (d)	0.81	0.76
CD (P=0.05)	1.98	1.87
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	81.20	77.09
W <sub>2</sub> Stale Seed bed	82.20	78.04
W <sub>3</sub> Stale seed bed followed by Chemical weed control	83.63	79.40
W <sub>4</sub> Stale Seed bed followed by hand weeding	84.24	79.99
W <sub>5</sub> Chemical weed control followed by hand weeding	85.83	81.62
W <sub>6</sub> Weed free check	87.06	82.74
W <sub>7</sub> Unweeded check	72.30	63.93
SE (d)	2.15	2.00
CD (P=0.05)	4.31	4.02
Interaction	N.S	N.S

**A. Effect of crop establishment:**

It is evident from the result table 4.12 showed that the different crop establishment methods were significantly

influenced the biological yield (q/ha) in both respective years of 2000 and 2001 and with the adopted the Basmati rice transplanted in puddled soil was significantly increased the biological yield in both the years of field trial over rice transplanted in unpuddled soil or direct seeding in unpuddled soil respectively in both the years. The direct seeding in unpuddled soil the rice was gave significantly lowest biological yield (q/ha) in both the years of field trial.

#### **B. Effect of weed control practices:**

Perusal from the result table 4.12 showed that the various weed control practices were significantly reflected the biological yield (q/ha) in the 2000 and 2001 and with the trying the weed free check were noted significantly higher biological yield in both the years followed by the trying chemical weed control followed by hand weeding, stale seed bed followed by hand weeding and stale seed bed followed by chemical weed control over stale seed bed, chemical weed control and un weeded check respectively in the both the years of field trial. The un weed check treatment was observed significantly lowest biological yield (q/ha) in the both years of field trial.

#### **2. Grain yield (q/ha):**

The data regarding grain yield of Basmati rice were tabulated and analyzed statistically and the results have been

presented in Table 4.13. The main effects of different crop establishment and various weed control practices were also depicted in Fig. 15. The analysis of variance table also given in Appendix-XV for reference.

**Table 4.13 Effect of different crop establishment and various weed control practices on grain yield (q/ha) of Basmati rice in both the years.**

A. Crop establishment	Treatments	Grain yield (q/ha)	
		2000	2001
	T <sub>1</sub> Transplanting puddled	35.95	34.19
	T <sub>2</sub> Transplanting unpuddled	34.76	33.25
	T <sub>3</sub> Direct seeding unpuddled	33.84	32.29
	SE (d)	0.41	0.36
	CD (P=0.05)	1.01	0.89
<b>B. Weed Control Practices</b>			
	W <sub>1</sub> Chemical weed control	34.78	33.11
	W <sub>2</sub> Stale Seed bed	35.16	33.54
	W <sub>3</sub> Stale seed bed followed by Chemical weed control	35.77	34.06
	W <sub>4</sub> Stale Seed bed followed by hand weeding	36.06	34.38
	W <sub>5</sub> Chemical weed control followed by hand weeding	36.68	34.90
	W <sub>6</sub> Weed free check	37.22	35.60
	W <sub>7</sub> Unweeded check	28.27	27.10
	SE (d)	1.12	0.98
	CD (P=0.05)	2.24	1.97
	Interaction	N.S	N.S

**A. Effect of crop establishment:**

It is evident from the result table 4.13 showed that the different crop establishment were significantly affected the grain

yield (q/ha) in respective years and the Basmati rice transplanted in puddled soil was obtained significantly higher grain yield (q/ha) over the Basmati rice was transplanted in unpuddled soil and direct seeding in unpuddled soil. In 2000 the Basmati rice was transplanted in unpuddled soil and direct seeding in unpuddled soil produced at par grain yield but in 2001. The rice was transplanted in unpuddled soil obtained significantly more grain yield over direct seeding in unpuddled soil.

#### **B. Effect of weed control practices:**

Perusal of the result table 4.13 showed that the Basmati rice grain yield (q/ha) were significantly reflected with the trying various weed control practices in respective both the years and with applying weed free check was attributed significantly more grain yield in the both the years followed by chemical weed control followed by hand weeding, stale seed bed followed by hand weeding and stale seed bed followed by chemical weed control over stale seed bed, chemical weed control and unweeded check respectively in both the years of field trial. The unweeded check was registered significantly lowest grain yield in the both years.

#### **3. Straw yield (q/ha):**

The data regarding straw yield (q/ha) were tabulated and analyzed statistically and the results have been presented in



Table 4.14. The main effects of different crop establishment and various weed control practices were illustrated by graphically in Fig. 16. The analysis of variance table have been given in Appendix-XVI for reference.

**Table 4.14 Effect of different crop establishment and various weed control practices on straw yield (q/ha) of Basmati rice in both the years.**

A. Treatments	Straw yield (q/ha)	
	2000	2001
T <sub>1</sub> Transplanting puddled	48.08	45.71
T <sub>2</sub> Transplanting unpuddled	47.26	44.08
T <sub>3</sub> Direct seeding unpuddled	46.02	43.11
SE (d)	0.51	0.43
CD (P=0.05)	1.25	1.04
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	46.42	43.98
W <sub>2</sub> Stale Seed bed	47.04	44.50
W <sub>3</sub> Stale seed bed followed by Chemical weed control	47.86	45.34
W <sub>4</sub> Stale Seed bed followed by hand weeding	48.19	45.61
W <sub>5</sub> Chemical weed control followed by hand weeding	49.15	46.73
W <sub>6</sub> Weed free check	49.84	47.14
W <sub>7</sub> Unweeded check	41.36	36.83
SE (d)	1.31	1.12
CD (P=0.05)	2.62	2.25
Interaction	N.S	N.S

**A. Effect of crop establishment:**

It is clear from the result table 4.14 showed that the different crop establishment were influenced significantly the

straw yield of Basmati rice and with the testing the Basmati rice were transplanted in puddled soil were produced significantly higher straw yield in both the years of field trial over Basmati rice transplanted in un puddled soil or direct seeding in un puddled soil in both the years.

#### **B. Effect of weed control practices:**

It is evident from the result table 4.14 showed that the various weed control practices were significantly reflected the straw yield of Basmati rice in the both the years of field trial and with trying the weed free check was registered significantly more straw yield in both years followed by chemical weed control followed by hand weeding, stale seed bed followed by hand weeding and stale seed bed followed by chemical weed control over stale respectively in the both years. The result table also clear that the un weeded check were registered significantly lowest straw yield in both years.

#### **4. Harvest Index (%):**

After calculated grain, straw ratio (Harvest Index) were analyzed statistically and the result have been presented in Table 4.15. The main effects of different crop establishment and various weed control practices were also illustrated by

graphically in Fig. 17. The analysis of variance table have been given in Appendix-XVII for reference.

**Table 4.15 Effect of different crop establishment and weed control practices on harvest index (%) of Basmati rice in both the years.**

<b>Treatments</b>		
<b>A. Crop establishment</b>		
	<b>2000</b>	<b>2001</b>
T <sub>1</sub> Transplanting puddled	42.78	42.78
T <sub>2</sub> Transplanting unpuddled	42.77	42.98
T <sub>3</sub> Direct seeding unpuddled	42.78	42.80
SE (d)	0.07	0.08
CD (P=0.05)	N.S.	0.19
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	42.83	42.95
W <sub>2</sub> Stale Seed bed	42.78	42.98
W <sub>3</sub> Stale seed bed followed by Chemical weed control	42.77	42.90
W <sub>4</sub> Stale Seed bed followed by hand weeding	42.80	42.99
W <sub>5</sub> Chemical weed control followed by hand weeding	42.73	42.75
W <sub>6</sub> Weed free check	42.75	43.12
W <sub>7</sub> Unweeded check	42.80	42.29
SE (d)	0.19	0.08
CD (P=0.05)	0.37	0.19
Interaction	N.S	N.S

**A. Effect of crop establishment:**

It is evident from the result table 4.15 showed that the different crop establishment failed to touch the level of

significantly in 2000; but the direct seeding in unpuddled soil were observed statistically higher grain straw ratio over Basmati rice transplanted in puddled soil and rice transplanted unpuddled soil. In 2001 the rice was transplanted in unpuddled soil gave significantly wide grain-straw ratio over direct seeding and transplanted in puddled soil and direct seeding respectively.

#### **B. Effect of weed control practices:**

The result table 4.15 showed that the various weed control did not influence the harvest index (%) in 2000 but chemical weed control practices increased harvest index statistically over stale seed bed followed by hand weeding, unweeded check, stale seed bed, stale seed bed followed by chemical weed control, weed free check and chemical weed control respectively. In 2001 the various weed control practices significantly reflected the harvest index and with applying weed free check was observed significantly wide grain-straw ratio followed by stale seed bed followed by hand weeding, stale seed bed, chemical weed control, stale seed bed followed by chemical weed control and chemical weed control followed by hand weeding over unweeded check respectively.

#### **E. UPTAKE STUDIES:**

##### **1. N content in Rice Grain:**

After chemical analysis the data regarding nitrogen content in Basmati rice grain were tabulated and analyzed

statistically and the results have been presented in Table 4.16. The main effects of different crop establishment and various weed control practices also illustrated graphically in Fig. 18. The analysis of variance table have been given in Appendix-XVIII for reference.

**Table 4.16 Effect of different crop establishment and various weed control practices on Nitrogen content in grain of Basmati rice in both the years.**

Treatments	Nitrogen content in rice grain	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	1.2834	1.2819
T <sub>2</sub> Transplanting unpuddled	1.2813	1.2801
T <sub>3</sub> Direct seeding unpuddled	1.2800	1.2789
SE (d)	0.0008	0.0007
CD (P=0.05)	0.0020	0.0019
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	1.2797	1.2780
W <sub>2</sub> Stale Seed bed	1.2817	1.2803
W <sub>3</sub> Stale seed bed followed by Chemical weed control	1.2830	1.2820
W <sub>4</sub> Stale Seed bed followed by hand weeding	1.2853	1.2840
W <sub>5</sub> Chemical weed control followed by hand weeding	1.2860	1.2847
W <sub>6</sub> Weed free check	1.2883	1.2873
W <sub>7</sub> Unweeded check	1.2670	1.2657
SE (d)	0.0021	0.0011
CD (P=0.05)	0.0043	0.0040
Interaction	N.S	N.S

**A. Effect of crop establishment:**

It is clear from the result table 4.16 showed that the different crop establishment were significantly influence the

nitrogen content in rice grain and with the trying the rice transplanted in puddled soil was significantly increased the N- Content in rice grain in both years over rice planted in unpuddled soil and direct seeding in unpuddled soil respectively.

#### **B. Effect of weed control practices:**

It is evident from the result table 4.16 showed that the various weed control practices significantly reflected the N-content in rice grain in both the years of with applying weed free check was obtained significantly higher N-content followed by chemical weed control followed by hand weeding and stale seed bed followed by hand weeding over stale seed bed followed by chemical weed control, stale seed bed, chemical weed control and un weeded check respectively.

#### **2. N- content in Straw:**

The data regarding N-content in rice straw were tabulated and analyzed statistically and the result have been presented in table 4.17. The main effect of different crop establishment and various weed control practices were also illustrated graphically in Fig. 19. The analysis of variance table have been given in Appendix-XIX for reference.

**Table 4.17 Effect of different crop establishment and various weed control practices on N-content in rice straw in 2000 and 2001**

A. Crop establishment	Treatments	N- content in straw	
		2000	2001
	T <sub>1</sub> Transplanting puddled	0.5426	0.5406
	T <sub>2</sub> Transplanting unpuddled	0.5416	0.5400
	T <sub>3</sub> Direct seeding unpuddled	0.5406	0.5389
	SE (d)	0.0008	0.0007
	CD (P=0.05)	0.0019	0.0017
<b>B. Weed Control Practices</b>			
	W <sub>1</sub> Chemical weed control	0.5410	0.5390
	W <sub>2</sub> Stale Seed bed	0.5420	0.5400
	W <sub>3</sub> Stale seed bed followed by Chemical weed control	0.5417	0.5400
	W <sub>4</sub> Stale Seed bed followed by hand weeding	0.5430	0.5413
	W <sub>5</sub> Chemical weed control followed by hand weeding	0.5440	0.5420
	W <sub>6</sub> Weed free check	0.5443	0.5430
	W <sub>7</sub> Unweeded check	0.5350	0.5333
	SE (d)	0.0020	0.0017
	CD (P=0.05)	0.0039	0.0034
	Interaction	N.S	N.S

### **A. Effect of crop establishment:**

Perusal of the result table 4.17 showed that the different crop establishment were significantly reflected the N-content in rice straw in both the years and with rice transplanted in puddled soil followed by the rice transplanted in un puddled soil observed significantly more N-content in straw over direct seeding in un puddled soil respectively.

### **B. Effect of weed control practices:**

It is evident from the result table 4.17 showed that the various weed control practices were significantly influence the N-content in rice straw in 60<sup>th</sup> the years and with the application weed free check was significantly more N-content in both years followed by chemical weed control followed by hand weeding, stale seed bed followed by hand weeding, stale seed bed followed by chemical weed control, stale seed bed and chemical weed control over un weeded check respectively in both years.

### **3. N- up take in Grain kg/ha:**

The data regarding N- up take by rice grain (kg/ha) were tabulated and analyzed statistically and the result have been presented in Table 4.18. The main effect of different crop



establishment and various weed control were also depicted by graphically in Fig. 20. The analysis of variance table have been given in Appendix-XX for reference.

**Table 4.18 Effect of different crop establishment and various weed control practices on N-up take by rice grain in 2000 and 2001**

Treatments	N- up take by rice grain (Kg/ha)	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	46.15	43.84
T <sub>2</sub> Transplanting unpuddled	44.55	42.58
T <sub>3</sub> Direct seeding unpuddled	43.33	41.30
SE (d)	0.42	0.40
CD (P=0.05)	1.01	0.98
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	44.50	42.32
W <sub>2</sub> Stale Seed bed	45.06	42.94
W <sub>3</sub> Stale seed bed followed by Chemical weed control	45.90	43.66
W <sub>4</sub> Stale Seed bed followed by hand weeding	46.34	44.15
W <sub>5</sub> Chemical weed control followed by hand weeding	47.17	44.83
W <sub>6</sub> Weed free check	47.95	45.83
W <sub>7</sub> Unweeded check	35.82	34.30
SE (d)	1.13	1.02
CD (P=0.05)	2.26	2.05
Interaction	N.S	N.S

#### **A. Effect of crop establishment:**

It is evident from the result table 4.18 showed that the different crop establishment were significantly affected the N-uptake by rice grain in 60<sup>th</sup> years and with the trying the Basmati rice transplanted in puddled soil was obtained significantly more N - uptake by rice grain over, the rice transplanted in unpuddled soil or direct seeding in unpuddled soil in both years.

#### **B. Effect of weed control practices:**

It is clear from the result table 4.18 showed that the various weed control practices were significantly affected the N-uptake by rice grain in both the years and with applying weed free check was obtained significantly higher N- uptake by rice grain followed by chemical weed control followed by hand weeding and stale seed bed followed by hand weeding over stale seed bed followed by chemical weed control, stale seed bed chemical weed control and un weeded check respectively in both the years.

#### **4. N- up take on straw (kg/ha):**

The data regarding N-up take by rice straw (kg/ha) were tabulated and analyzed statistically and the results have been

presented in Table 4.19. The main effect of different crop establishment and various weed control practices were also illustrated graphically in Fig. 21. The analysis of variance table have been given in Appendix-XXI for reference.

**Table 4.19 Effect of different crop establishment and various weed control practices on N-uptake by rice straw (kg/ha) in 2000 and 2001**

A. Crop establishment	Treatments	N- up take by rice grain (Kg/ha)	
		2000	2001
	T <sub>1</sub> Transplanting puddled	26.10	24.73
	T <sub>2</sub> Transplanting unpuddled	25.60	23.82
	T <sub>3</sub> Direct seeding unpuddled	24.89	23.24
	SE (d)	0.30	0.26
	CD (P=0.05)	0.73	0.65
<b>B. Weed Control Practices</b>			
	W <sub>1</sub> Chemical weed control	25.12	23.71
	W <sub>2</sub> Stale Seed bed	25.49	24.03
	W <sub>3</sub> Stale seed bed followed by Chemical weed control	25.92	24.50
	W <sub>4</sub> Stale Seed bed followed by hand weeding	26.19	24.69
	W <sub>5</sub> Chemical weed control followed by hand weeding	26.74	25.3
	W <sub>6</sub> Weed free check	27.13	25.60
	W <sub>7</sub> Unweeded check	22.13	19.64
	SE (d)	0.82	0.73
	CD (P=0.05)	1.64	1.46
	Interaction	N.S	N.S

### **A. Effect of crop establishment:**

It is obvious from the result table 4.19 showed that the different crop establishment were significantly reflected the N- up take by rice straw in the years and with the Basmati rice transplanted in puddled soil was registered significantly more N up take by straw of rice in to the years of field trial over the Basmati rice transplanted in unpuddled soil or direct seeding in un puddled soil respectively in the both years. The result table also showed that he both methods, rice transplanted in un puddled soil and direct seeding in un puddled soil was found at par.

### **B. Effect of weed control practices:**

A perusal of the result table 4.19 showed that the various weed control practices were significantly influenced the N- up take by rice straw in both the years of field trial and with applying weed free check treatment was registered significantly more N- up take in both years followed by chemical weed control followed by hand weeding, stale seed bed followed by hand weeding and stale seed bed followed by chemical weed control over stale seed bed, chemical weed control and un weeded check respectively in both the years of field trial.

### **F. WEED STUDIES:**

#### **Weed flora of Experimental Site:**

The three types of weeds are found an experiment site i.e. 1- Grass, 2- Broad leaved and 3- sedges. The list of weed flora are given in Table 4.20 with its Botanical name, English Name, Common name family and habitate as under.

**Table 4.20 Weed flora of Experimental site:**

1.	Weed Grassless	Botanical Name	English Name	Common Name	Family	Habitat
		Cynodon dactylon	<i>Barmuda grass</i>	Doob grass	Poaceae	Perennial
		Echinochloa crusgalli	<i>Bamyard grass</i>	Shyma ghas	Poaceae	Annual
		Echinochloa colonum	<i>Shams millet</i>	Swanter	Poaceae	Annual
		Eleusine indica	<i>Goose grass</i>	Malnpurim kodi	Poaceae	Annual
		Digitaria sanguinalis	<i>Crab grass</i>	Hindu Behar	Poaceae	Annual
		Dactyloctenium aegypticum	<i>Crow foot</i>	Maker ghas	Poaceae	Annual
		Panicum repens	-	Debbar	Poaceae	Annual
		Commelina benghalensis	<i>Diary wandering</i>	Kanchara	Poaceae	Annual
2.	<b>Broad leaved</b>	Amaranthus viridis	-	Jangli Chauhari	Amaranthosa	Annual
		Ammaria baccifera	-	Jangli mehandi	Lythracea	Annual
		Caesulia axillaris	-	-	Compositae	Annual
		Corchorus acutengules	-	Jangli jute	Tiliaceae	Annual
		Eclipta alba	-	Bhanjra	composite	Annual
		Euphorbia hirta	<i>Asthma pluub</i>	Baridudhi	Euphorbia cea	Annual
		Phyllanthus hirta	<i>Asthma pluub</i>	Hazardana	Euphorbia cea	Annual
		Train therma monogyna	<i>Norse purselene</i>	Patharchta aizoaceal		Annual
		Cyperus rotundus	<i>Nat grass</i>	Motha cyperaceae		perennial
		Cyperus iria	-	Motha ledu	cyperaceae	perennial
		Cyperus difformis	-	Motha bada	cyperaceae	perennial
	<b>Sedges</b>	Fimbistylis miliaceae	-	Banchitra		

## 1. Density of grasses/m<sup>2</sup>:

The data regarding number of grasses/m<sup>2</sup> were tabulated and analyzed statistically and the result have been presented in table 4.21 for 30, 60 and at maturity of 2000 and 2001. The main effect of different crop establishment and various weed control practices were also depicted in Fig. 22. The analysis of variance tables have been given in Appendix-XXII, XXIII and XXIV for reference.

**Table 4.21 Effect of different crop establishment and various weed control practices on number of grasses at 30,60 DAS and at maturity of 2000 and 2001.**

Treatments	Number of grasses/m <sup>2</sup>					
	2000			2001		
	30	60 DAS	Maturity	30	60 DAS	Maturity
<b>A. Crop establishment</b>						
T <sub>1</sub> Transplanting puddled	3.37 (13.25)*	3.78 (16.40)	3.57 (14.79)	3.65 (15.54)	4.00 (18.40)	3.80 (16.63)
T <sub>2</sub> Transplanting unpuddled	3.76 (15.92)	3.95 (17.60)	3.76 (15.87)	4.14 (19.26)	4.17 (19.66)	3.98 (17.80)
T <sub>3</sub> Direct seeding unpuddled	4.11 (19.18)	4.09 (18.97)	3.90 (17.11)	4.54 (23.35)	4.28 (20.72)	4.10 (18.86)
SE (d)	0.08	0.07	0.07	0.10	0.07	0.07
CD (P=0.05)	0.19	0.16	0.17	0.23	0.18	0.17
<b>B. Weed Control Practices</b>						
W <sub>1</sub> Chemical weed control	4.20 (17.76)	4.34 (18.57)	4.11 (16.73)	4.67 (22.27)	4.60 (20.98)	4.38 (19.03)
W <sub>2</sub> Stale Seed bed	4.08 (16.50)	4.24 (17.70)	4.01 (15.97)	4.54 (20.72)	4.47 (19.77)	4.25 (17.91)
W <sub>3</sub> Stale seed bed followed by Chemical weed control	3.83 (14.46)	4.01 (15.81)	3.79 (14.29)	4.28 (18.35)	4.29 (18.30)	4.09 (16.63)
W <sub>4</sub> Stale Seed bed followed by hand weeding	3.66 (12.99)	3.94 (15.08)	3.75 (13.60)	4.11 (16.545)	4.21 (17.29)	4.02 (15.68)
W <sub>5</sub> Chemical weed control followed by hand weeding	3.42 (11.22)	3.75 (13.62)	3.58 (12.32)	3.89 (14.76)	4.05 (15.94)	3.97 (14.46)
W <sub>6</sub> Weed free check	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)
W <sub>7</sub> Unweeded check	6.33 (39.88)	6.56 (42.81)	6.24 (38.58)	6.57 (43.06)	6.72 (44.88)	6.40 (40.62)
SE (d)	0.18	0.17	0.21	0.22	0.20	0.20
CD (P=0.05)	0.37	0.34	0.42	0.45	0.40	0.41
Interaction	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.

Values of parenthesis are original:

**A. Effect of crop establishment:**

A critical scanning of the result table 4.21 indicates that different crop establishment of Basmati rice did cause significant variation in density of grassy weeds/m<sup>2</sup> at all the stages of observation in both the years. Transplanted Basmati rice in puddled soil condition was observed significantly lowest grassy populations of weeds/m<sup>2</sup> followed by Basmati rice transplanted in unpuddled soil over direct seeding in unpuddled soil respectively in the both the years of field trial.

**B. Effect of weed control practices:**

Considerable variation in number of grassy weeds/m<sup>2</sup> at all the crop growth stages Table 4.21 showed that the various weed control practices were significantly influenced the number of grassy weeds/m<sup>2</sup> and the testing of weed free check was count soil grassy weeds/m<sup>2</sup> over chemical weed control followed by hand weeding, stale seed bed followed by hand weeding. Stale seed bed followed by chemical weed control, stale seed bed chemical weed control and un weeded check respectively in both the years.

## 2. Broad leaved weeds/m<sup>2</sup>:

The data regarding broad leaved weeds/m<sup>2</sup> at various stages were tabulated and analyzed statistically and the results have been pertaining in Table 4.22. The main effects of different crop establishment and various weed control practices also illustrated graphically in Fig. 23. The analysis of variance table have been given in appendix-XXV, XXVI & XXVII for reference.

**Table 4.22 Effect of different crop establishment and various weed control practices on broad leaved weeds/m<sup>2</sup> at 30, 60 DAS and at maturity of 2000 and 2001**

Treatments		2000			2001		
		30	60 DAS	Maturity	30	60 DAS	Maturity
<b>A. Crop establishment</b>							
T <sub>1</sub>	Transplanting puddled	1.76 (2.82)	1.93 (3.58)	1.87 (3.33)	1.84 (3.14)	1.97 (3.78)	1.93 (3.55)
T <sub>2</sub>	Transplanting unpuddled	1.82 (3.05)	2.00 (3.81)	2.00 (3.81)	1.89 (3.32)	2.11 (4.28)	2.02 (3.88)
T <sub>3</sub>	Direct seeding unpuddled	1.86 (3.20)	2.05 (4.07)	2.08 (4.18)	1.92 (3.45)	2.16 (4.56)	2.08 (4.15)
	SE (d)	0.03	0.03	0.04			
	CD (P=0.05)	0.05	0.07	0.10			
<b>B. Weed Control Practices</b>							
W <sub>1</sub>	Chemical weed control	2.04 (3.69)	2.28 (4.77)	2.29 (4.84)	2.07 (3.82)	2.40 (5.36)	2.31 (4.88)
W <sub>2</sub>	Stale Seed bed	1.97 (3.40)	2.20 (4.41)	2.21 (4.44)	2.04 (3.69)	2.31 (4.93)	2.23 (4.56)
W <sub>3</sub>	Stale seed bed followed by Chemical weed control	1.94 (3.26)	2.15 (4.18)	2.16 (4.25)	2.02 (3.06)	2.25 (4.67)	2.19 (4.38)
W <sub>4</sub>	Stale Seed bed followed by hand weeding	1.91 (3.16)	2.10 (3.92)	2.07 (3.78)	2.00 (3.51)	2.16 (4.18)	2.11 (3.95)
W <sub>5</sub>	Chemical weed control followed by hand weeding	1.85 (2.94)	2.06 (3.75)	2.02 (3.57)	1.97 (3.38)	2.13 (4.03)	2.06 (3.74)
W <sub>6</sub>	Weed free check	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)
W <sub>7</sub>	Unweeded check	2.28 (4.72)	2.48 (5.70)	2.45 (5.54)	2.36 (5.12)	2.59 (6.30)	2.44 (5.51)
	SE (d)	0.06	0.04	0.03	0.03	0.04	0.03
	CD (P=0.05)	0.11	0.10	0.07	0.07	0.11	0.07
	Interaction	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.



### **A. Effect of crop establishment:**

It is evident from the result table 4.22 showed that the different crop establishment were significantly reflected the population of broad leaved weed g/m<sup>2</sup> and in the rice transplanted in puddled soil was observed significantly lowest weeds population of broad leaved weeds/m<sup>2</sup> followed by the rice transplanted in un puddled soil over direct seeding in un puddled soil respectively in both the years. The results table also revealed that the broad leaved weeds was increased up to the 60 DAS and after reduced autocratically at maturity in the both the years of field experimentation.

### **B. Effect of weed control practices:**

The perusal of the result table 4.22 showed that the result table 4.22 showed that the various weed control practices types in different planting methods of Basmati rices were significantly influenced the number of broad leaved weeds/m<sup>2</sup> in both the years and with trying the weed free check was observed significantly lowest number of weeds/m<sup>2</sup> over rest weed control practices in both the years. The result table also indicated the chemical weed control, stale seed bed an stale seed bed followed by chemical weed control were observed at par but they significantly higher weeds/m<sup>2</sup> over stale seed bed followed b hand weeding and chemical weed control in both years respectively.

### 3. Sedges weeds/m<sup>2</sup>:

The data regarding sedges weeds/m<sup>2</sup> at various crop growth stages were tabulated and analyzed statistically and the results have been presented in Table 4.23. The main effect of different crop establishment and various weed control practices were also depicted by graphically in Fig. 24. The analysis of variance table have been presented in appendix-XXVIII, XXIX and XXX for reference.

**Table 4.23 Effect of different crop establishment and various weed control practices on sedges/m<sup>2</sup> at various crop growth stages of rice in both years.**

Treatments	Number of sedges/m <sup>2</sup>					
	2000			2001		
	30	60 DAS	Maturity	30	60 DAS	Maturity
<b>A. Crop establishment</b>						
T <sub>1</sub> Transplanting puddled	3.69 (15.04)	3.96 (17.54)	3.58 (14.17)	3.98 (17.71)	4.17 (19.61)	3.77 (15.88)
T <sub>2</sub> Transplanting unpuddled	4.31 (20.30)	4.63 (23.61)	4.18 (19.07)	4.66 (23.60)	4.88 (26.26)	4.36 (20.77)
T <sub>3</sub> Direct seeding unpuddled	4.46 (21.92)	4.82 (25.77)	4.37 (20.99)	4.78 (25.38)	5.03 (28.19)	4.56 (22.98)
SE (d)	0.07	0.08	0.06	0.08	0.10	0.08
CD (P=0.05)	0.16	0.21	0.16	0.20	0.24	0.19
<b>B. Weed Control Practices</b>						
W <sub>1</sub> Chemical weed control	4.79 (22.75)	5.20 (27.10)	4.69 (21.97)	5.18 (26.75)	5.44 (29.78)	4.93 (24.34)
W <sub>2</sub> Stale Seed bed	4.62 (21.29)	5.01 (25.15)	4.53 (20.39)	5.04 (25.48)	5.31 (28.40)	4.81 (23.18)
W <sub>3</sub> Stale seed bed followed by Chemical weed control	4.54 (20.48)	4.92 (24.26)	4.45 (19.70)	4.90 (24.10)	5.18 (26.95)	4.68 (21.86)
W <sub>4</sub> Stale Seed bed followed by hand weeding	4.50 (19.93)	4.85 (23.32)	4.37 (18.84)	4.87 (23.45)	5.10 (25.76)	4.60 (20.87)
W <sub>5</sub> Chemical weed control followed by hand weeding	4.36 (18.72)	4.68 (21.59)	4.22 (17.46)	4.72 (21.90)	4.93 (23.98)	4.45 (19.43)
W <sub>6</sub> Weed free check	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)
W <sub>7</sub> Unweeded check	5.54 (30.47)	5.90 (34.71)	5.34 (28.17)	5.89 (34.62)	6.15 (37.93)	5.44 (29.47)
SE (d)	0.17	0.20	0.17	0.21	0.10	0.20
CD (P=0.05)	0.14	0.41	0.34	0.43	0.48	0.40
Interaction	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.

**A. Effect of crop establishment:**

A perusal of the result table 4.23 showed that the number of sedges/m<sup>2</sup> weeds were significantly reflected with the different crop establishment at various crop growth stages of Basmati rice in both the years and with the methods the rice transplanted in puddling soil were registered significantly lowest number sedges weeds/m<sup>2</sup> in the stages followed by the rice transplanted in un puddled soil over direct seeding in un puddled soil respectively in the both years.

**B. Effect of weed control practices:**

It is evident from the result table 4.23 showed that the various weed control practices were significantly influenced the number of sedges weeds/m<sup>2</sup> at all the crop growth stages of rice and the weed free check was count significantly lowest sedges weeds/m<sup>2</sup> at all the stages of rice over chemical weed control, stale seed bed, stale seed bed followed by chemical weed control, stale seed bed followed by hand weeding, chemical weed control followed by hand weeding and weed free check respectively in both the years.

#### 4. Total weeds/m<sup>2</sup> grassy:

The data regarding total weeds/m<sup>2</sup> (grassy) were tabulated and analysis statistically and the results have been present in Table 4.24. The main effects of different crop establishment and various weed control practices have been illustrated graphically in Fig. 25. The analysis of variance table have been given in Appendix-XXXI for reference

**Table 4.24 Effect of different crop establishment and various weed control practices on total grassy weeds/m<sup>2</sup> at 30, 60 DAS and at maturity of the rice crop in both years.**

Treatments	Grassy weeds/m <sup>2</sup>	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	6.08 (44.44)	6.50 (50.57)
T <sub>2</sub> Transplanting unpuddled	6.48 (49.40)	6.97 (56.71)
T <sub>3</sub> Direct seeding unpuddled	6.86 (55.26)	7.34 (62.93)
SE (d)	0.11	0.13
CD (P=0.05)	0.27	0.32
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	7.26 (53.06)	7.85 (62.28)
W <sub>2</sub> Stale Seed bed	7.07 (50.17)	7.61 (58.40)
W <sub>3</sub> Stale seed bed followed by Chemical weed control	6.67 (44.57)	7.27 (53.28)
W <sub>4</sub> Stale Seed bed followed by hand weeding	6.48 (41.67)	7.06 (49.51)
W <sub>5</sub> Chemical weed control followed by hand weeding	6.13 (37.16)	6.75 (45.16)
W <sub>6</sub> Weed free check	0.71 (0.00)	0.71 (0.00)
W <sub>7</sub> Unweeded check	11.01 (121.28)	11.32 (128.56)
SE (d)	0.28	0.33
CD (P=0.05)	0.55	0.67
Interaction	N.S	N.S

#### **A. Effect of crop establishment:**

It is evident from the result table 4.24 showed that different crop establishment significantly reflected the number of grassy weeds/m<sup>2</sup> in both the years and with the transplanted method in puddled soil were count significantly lowest grassy weeds/m<sup>2</sup> in both years over rice transplanted in unpuddled soil or direct seeding in unpaddled soil respectively.

#### **B. Effect of weed control practices:**

A perusal the result table 4.24 showed that the various weed control practices were significantly influence the number of grassy weeds/m<sup>2</sup> in both the years of field trial and with the weed free was registered significantly nil grassy of weeds/m<sup>2</sup> in both the years, but the unweeded check was obtained significantly more total grassy weeds/m<sup>2</sup> in both years. therefore, chemical weed control, Stale seed bad and stale seed bed followed by chemical weed control showed at par number of total grassy weeds/m<sup>2</sup> respectively in both years.

#### **5. Total Broad leaved weeds/m<sup>2</sup>:**

The data regarding total broad leaves weeds/m<sup>2</sup> were tabulated and analysis statistically and the results have been presented in Table 4.25. The main effects of different crop

establishment and various weed control practices were also depicted in Fig. 26. The analysis of variance table have been given in Appendix-XXXII for reference

**Table 4.25 Effect of different crop establishment and various weed control practices on total number of broad leaves weeds/m<sup>2</sup> in both the years.**

A. Treatments	Total Broad leaves/m <sup>2</sup>	
	2000	2001
T <sub>1</sub> Transplanting puddled	3.01 (9.72)	3.131 (10.47)
T <sub>2</sub> Transplanting unpuddled	3.18 (10.67)	3.29 (11.49)
T <sub>3</sub> Direct seeding unpuddled	3.27 (11.46)	3.36 (12.16)
SE (d)	0.07	0.07
CD (P=0.05)	0.17	0.16
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	3.68 (13.29)	3.79 (14.05)
W <sub>2</sub> Stale Seed bed	3.55 (12.25)	3.68 (13.19)
W <sub>3</sub> Stale seed bed followed by Chemical weed control	3.47 (11.70)	3.61 (12.65)
W <sub>4</sub> Stale Seed bed followed by hand weeding	3.37 (10.86)	3.42 (11.64)
W <sub>5</sub> Chemical weed control followed by hand weeding	3.28 (10.26)	3.41 (11.16)
W <sub>6</sub> Weed free check	0.71 (0.00)	0.71 (0.00)
W <sub>7</sub> Unweeded check	4.02 (15.96)	4.14 (16.92)
SE (d)	0.16	0.15
CD (P=0.05)	0.32	0.30
Interaction	N.S	N.S

**A. Effect of crop establishment:**

It is clear from the result table 4.25 showed that the different crop establishment were significantly affected the total number of broad leaved weeds/m<sup>2</sup> in both the years and the basmati rice transplanted in puddled soil were found significantly lowest total broad leaved weeds/m<sup>2</sup> in both the years over the basmati rice transplanted in unpuddled soil or direct seeded unpuddled soil in both the years respectively.

**B. Effect of weed control practices:**

It is evident from the result table 4.25 showed that the various wee control practices were significantly influenced the total number of broad leaved weeds/m<sup>2</sup> in both the years and the broad leaved weeds/m<sup>2</sup> were count nil in weed free check in both years over rest treatments of weed control practices in both years. The results table also clear the chemical weed control, Stale seedbed, Stale seed bed followed by hand weeding were notices at par but they are significantly lowest number of broad leaved weeds/m<sup>2</sup>- over chemical weed control followed by hand weeding over weed free check in both the years of field experimentation.

## 6. Total Sedges weeds/m<sup>2</sup>:

The data regarding total sedges weeds/m<sup>2</sup> were tabulated and analysis statistically and the results have been present in Table 4.26. The main effects of different crop establishment were illustrated graphically in Fig. 27. The analysis of variance table have been given in Appendix-XXXIII for reference

**Table 4.26 Effect of different crop establishment and various weed control practices on total number of sedges weeds/m<sup>2</sup> in both the years.**

A. Crop establishment	Treatments	Number of total sedges weeds/m <sup>2</sup>	
		2000	2001
T <sub>1</sub> Transplanting puddled		6.36 (46.74)	6.76 (53.20)
T <sub>2</sub> Transplanting unpuddled		7.46 (7.76)	7.93 (71.44)
T <sub>3</sub> Direct seeding unpuddled		7.76 (68.69)	8.17 (76.55)
SE (d)		0.13	0.16
CD (P=0.05)		0.33	0.39
<b>B. Weed Control Practices</b>			
W <sub>1</sub> Chemical weed control		8.46 (71.82)	8.96 (80.87)
W <sub>2</sub> Stale Seed bed		8.12 (66.83)	8.70 (77.07)
W <sub>3</sub> Stale seed bed followed by Chemical weed control		7.97 (64.44)	8.46 (72.92)
W <sub>4</sub> Stale Seed bed followed by hand weeding		7.87 (62.09)	8.37 (70.07)
W <sub>5</sub> Chemical weed control followed by hand weeding		7.59 (57.77)	8.08 (65.31)
W <sub>6</sub> Weed free check		0.70 (0.00)	0.71 (0.00)
W <sub>7</sub> Unweeded check		9.63 (93.35)	10.09 (103.19)
SE (d)		0.33	0.39
CD (P=0.05)		0.65	0.78
Interaction		N.S	N.S



#### **A. Effect of crop establishment:**

It is evident from the result table 4.26 showed that the different planting methods of Basmati rice were significantly affected the sedges weeds/m<sup>2</sup> in both the years and the rice was transplanted in puddled soil count significantly lowest sedges weeds/m<sup>2</sup> in both years over the basmati rice transplanted in unpuddled soil and direct seeding in unpuddled soil in both years respectively.

#### **B. Effect of weed control practices:**

The result table 4.26 clearly indicate that the various weed control practices were significantly influence the total sedges weeds/m<sup>2</sup> in both years and in the weed free check treatment was count nil sedges weeds/m<sup>2</sup> in both years. The unweeded check was counted significantly more total sedges weeds/m<sup>2</sup> in both years. The stale seed bed followed by hand weeding, Stale seed bed and chemical weed control were counted at par total sedges weeds/m<sup>2</sup> in both the years.

### **6. DRY WEIGHT OF WEEDS:**

#### **(i) Dry weight g/m<sup>2</sup> of Grassy weeds:**

The data regarding dry weight g/m<sup>2</sup> of Grassy weeds were tabulated and analyzed statistically and the results have been

presented in Table 4.27. The main effects of different crop establishment and various weed control were also depicted in Fig.28. The analysis of variance table have been given in Appendix-XXXIV for reference.

**Table 4.27 Effect of different crop establishment and various weed control practices on dry weight of grassy weeds /m<sup>2</sup> in 2000 and 2001.**

A. Treatments	Dry weight of grassy g/m <sup>2</sup>	
	2000	2001
T <sub>1</sub> Transplanting puddled	4.56	5.18
T <sub>2</sub> Transplanting unpuddled	5.06	5.81
T <sub>3</sub> Direct seeding unpuddled	5.66	6.45
SE (d)	0.29	0.34
CD (P=0.05)	0.72	0.84
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	5.44	6.38
W <sub>2</sub> Stale Seed bed	5.14	5.98
W <sub>3</sub> Stale seed bed followed by Chemical weed control	4.57	5.45
W <sub>4</sub> Stale Seed bed followed by hand weeding	4.28	5.07
W <sub>5</sub> Chemical weed control followed by hand weeding	3.81	4.62
W <sub>6</sub> Weed free check	0.00	0.00
W <sub>7</sub> Unweeded check	12.43	13.18
SE (d)	0.59	0.66
CD (P=0.05)	1.18	1.33
Interaction	N.S	N.S

#### **A. Effect of crop establishment:**

The result table 4.27 indicate that the different planting methods of Basmati rice were significantly reflected the dry weight of grassy weed g/m<sup>2</sup> in both the years of field trial and with the transplanting method in puddled soil the dry weight of grassy weeds observed significantly lowest followed by the rice transplanted in unpuddled soil over direct seeding in unpuddled soil respectively in both the years.

#### **B. Effect of weed control practices:**

It is evident from the result table 4.27 showed that the various weed control practices were significantly influenced the dry weight of grassy weeds (g/m<sup>2</sup>) in both the field trial and the weed free check was obtained nil dry weight over other treatments of weed control practices in both years. The unweeded check was produced significantly more dry weight of grassy weeds in both years. The result table also showed that the stale seed bed followed by hand weeding, Stale seed bed followed by chemical, Stale seed bed and chemical weed control practices were found at par in both years, but they are significantly lowest over unweeded check respectively in both the years of field trial.

**(ii) Dry weight of weeds (g/m<sup>2</sup>) broad leaved weeds:**

The data regarding dry weight g/m<sup>2</sup> of broad leaved weeds were tabulated and analyzed statistically and the results have been presented in Table 4.28. The main effects of different planting methods and various weed control practices were have been illustrated graphically in Fig. 29. The analysis of variance table have been given in Appendix-XXXV for reference.

**Table 4.28 Effect of different crop establishment and various weed control practices on dry weight of broad leaved weeds (g/m<sup>2</sup>) of 2000 and 2001.**

A. Treatments	Dry weight of road leaved weeds	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	2.04	2.20
T <sub>2</sub> Transplanting unpuddled	2.24	2.40
T <sub>3</sub> Direct seeding unpuddled	2.40	2.54
SE (d)	0.10	0.12
CD (P=0.05)	0.26	0.29
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	2.79	2.93
W <sub>2</sub> Stale Seed bed	2.57	2.76
W <sub>3</sub> Stale seed bed followed by Chemical weed control	2.46	2.65
W <sub>4</sub> Stale Seed bed followed by hand weeding	2.28	2.43
W <sub>5</sub> Chemical weed control followed by hand weeding	2.15	2.34
W <sub>6</sub> Weed free check	0.00	0.00
W <sub>7</sub> Unweeded check	3.35	3.55
SE (d)	0.19	0.22
CD (P=0.05)	0.39	0.45
Interaction	N.S	N.S

**A. Effect of crop establishment:**

A perusal of result Table 4.28 showed that the different planting methods of Basmati rice were significant affect the dry weight of broad leaved weeds ( $\text{g}/\text{m}^2$ ) in both the years and the basmati rice transplanted in puddle soil was produced significantly lowest dry weight of broad leaved weeds in both years followed by the basmati rice transplanted in unpuddled soil over the direct seeding in unpuddled soil respectively.

**B. Effect of weed control practices:**

It is evident from the result table 4.28 showed that the various weed control practices significantly reflected the dry weight of broad leaved weeds in both the years and the weed free check were found significantly lowest, but the unweeded check were obtained significantly more dry weight of broad leaved weeds in both years. The chemical weed control followed by hand weeding, stale seed bed followed by hand weeding, stale seed bed followed by chemical weed control and stale seed bed were found at par in both the years.

**(iii) Dry weight of sedges weeds ( $\text{g}/\text{m}^2$ ) broad leaved weeds:**

The data regarding total sedges weeds ( $\text{g}/\text{m}^2$ ) were tabulated and analyzed statistically and the results have been

presented in Table-4.29. The main effects of different planting methods and various weed control practices were also illustrated by graphically in Fig. 30. The analysis of variance table have been given in Appendix-XXXVI for reference.

**Table 4.29 Effect of different crop establishment and various weed control practices on total sedges weeds dry weight (g/m<sup>2</sup>) in 2000 and 2001.**

A. Treatments	Dry weight of sedges weeds (g/m <sup>2</sup> )	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	3.36	3.86
T <sub>2</sub> Transplanting unpuddled	4.52	5.22
T <sub>3</sub> Direct seeding unpuddled	5.05	5.59
SE (d)	0.22	0.26
CD (P=0.05)	0.54	0.64
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	5.20	5.91
W <sub>2</sub> Stale Seed bed	4.90	5.61
W <sub>3</sub> Stale seed bed followed by Chemical weed control	4.70	5.33
W <sub>4</sub> Stale Seed bed followed by hand weeding	4.51	5.09
W <sub>5</sub> Chemical weed control followed by hand weeding	4.23	4.73
W <sub>6</sub> Weed free check	0.00	0.00
W <sub>7</sub> Unweeded check	6.63	7.54
SE (d)	0.47	0.56
CD (P=0.05)	0.94	1.13
Interaction	N.S	N.S

#### **A. Effect of crop establishment:**

A perusal of result Table 4.29 showed that the different planting methods of Basmati rice in both years were significantly affected by various planting methods and the Basmati rice transplanted in puddle soil was produced significantly lowest dry weight of sedges weeds in both years followed by the Basmati rice transplanted in unpuddled soil over direct seeded in unpuddled soil respectively in both years.

#### **B. Effect of weed control practices:**

It is clear from the result table 4.29 showed that the various weed control practices significantly influenced the total sedges weed dry weight ( $\text{g/m}^2$ ) in both the years and the weed free check was observed significantly lowest dry weight over rest weed control practices. The unweeded check was produced significantly more dry weight of sedges weeds in both the years. the result table also indicate that the chemical weed control followed by hand weeding, stale seed bed followed by hand weeding, stale seed bed followed by chemical weed control and stale seed bed weed control practices produced at par dry weight respectively in both year, but they significantly lowest with chemical weed control and unweeded check in both years.

**(iv) Total Dry weight of weeds (g/m<sup>2</sup>):**

The data regarding total dry weight of weeds (g/m<sup>2</sup>) were tabulated and analyzed statistically and the results have been presented in Table-4.30. The main effects of different planting methods and various weed control practices were also illustrated graphically in Fig. 31. The analysis of variance table have been given in Appendix-XXXVII for reference.

**Table 4.30 Effect of different crop establishment and various weed control practices on total dry weight of weeds (g/m<sup>2</sup>) in 2000 and 2001.**

A. <b>Treatments</b>	<b>Total dry weight of weeds (g/m<sup>2</sup>)</b>	
	<b>2000</b>	<b>2001</b>
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	9.96	11.24
T <sub>2</sub> Transplanting unpuddled	11.82	13.43
T <sub>3</sub> Direct seeding unpuddled	13.12	14.58
SE (d)	0.65	0.74
CD (P=0.05)	1.59	1.81
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	13.43	15.23
W <sub>2</sub> Stale Seed bed	12.61	14.36
W <sub>3</sub> Stale seed bed followed by Chemical weed control	11.73	13.44
W <sub>4</sub> Stale Seed bed followed by hand weeding	11.00	12.59
W <sub>5</sub> Chemical weed control followed by hand weeding	10.19	11.69
W <sub>6</sub> Weed free check	0.00	0.00
W <sub>7</sub> Unweeded check	22.41	24.27
SE (d)	1.28	1.50
CD (P=0.05)	2.57	3.01
Interaction	N.S	N.S



#### **A. Effect of crop establishment:**

It is obvious from the result table 4.30 showed that the different methods of basmati rice planted were significantly reflected the total dry matter accumulation in both years and the method, the basmati rice were transplanted in puddled soil gave significantly lowest total dry matter accumulation by weeds/m<sup>2</sup> in both the years and the basmati rice was transplanted in paddled soil were gave significantly lowest dry weight (g/m<sup>2</sup>) in both the years followed by the, therefore the rice were transplanted in unpuddled soil over treatment of direct seeded in unpuddled soil over direct seeding in unpuddled soil respectively in both years.

#### **B. Effect of weed control practices:**

It is clear from the result table 4.30 showed that the various weed control practices significantly influenced the dry weight of weeds in both years and the weed free check were found significantly lowest dry weight over rest treatment of weed control practices in both the years. The weed free check was obtained significantly nil total dry matter accumulation in both years over the rest treatments of weed control practices. The chemical weed control followed by hand weeding, Stale seed bed followed by hand weeding, stale seed bed or stale seed bed only observed at par, but they are significantly lowest on chemical weed control and unweeded check respectively in both the years.

**(v) N- uptake by weeds (kg/ha):**

The data regarding Nitrogen uptake by various type of weeds in rice crop were tabulated and analyzed statistically and the results have been presented in table-4.31. The main effects were also illustrated by graphically in Fig. 32. Appendix XXXVIII.

**Table 4.31 Effect of different crop establishment and various weed control practices on Nitrogen uptake by weeds (kg/ha) in 2000 and 2001.**

A. <b>Treatments</b>	<b>N uptake by weeds (kg/ha)</b>	
	<b>2000</b>	<b>2001</b>
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	19.71	22.25
T <sub>2</sub> Transplanting unpuddled	23.41	26.59
T <sub>3</sub> Direct seeding unpuddled	25.98	28.86
SE (d)	1.18	1.31
CD (P=0.05)	2.89	3.19
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	26.59	30.16
W <sub>2</sub> Stale Seed bed	24.97	28.43
W <sub>3</sub> Stale seed bed followed by Chemical weed control	23.23	26.61
W <sub>4</sub> Stale Seed bed followed by hand weeding	21.90	24.93
W <sub>5</sub> Chemical weed control followed by hand weeding	20.18	23.15
W <sub>6</sub> Weed free check	0.00	0.00
W <sub>7</sub> Unweeded check	44.38	48.04
SE (d)	2.32	2.67
CD (P=0.05)	4.65	5.35
Interaction	N.S	N.S

**A. Effect of crop establishment:**

It is clear from the result table 4.31 showed that the different planting methods of basmati rice were significantly reflected the nitrogen uptake by various weeds in both years and with methods that the basmati rice was transplanted in puddled soil were significantly lowest nitrogen uptake in both the years over the basmati rice were transplanted in unpuddled soil and direct seeding in unpuddled soil respectively in both the years.

**B. Effect of weed control practices:**

It is evident from the result table 4.31 showed that the various weed control practices were significantly influenced the Nitrogen uptake by the various weeds in both years and the weed free check was the nitrogen uptake nil, but the unweeded check was significantly more nitrogen by weeds over rest treatment of weed control practices in both the years. The stale seed bed followed by hand weeding, treatments stale seed bed followed by chemical weed control, stale seed bed and chemical weed control were found at par in Nitrogen uptake in both years, but they are significantly lowest Nitrogen uptake over chemical weed control and unweeded check respectively.

## G. ROOT STUDIES:

### 1. Length of root (cm):

The data regarding length of root (cm) of basmati were tabulated and analyzed statistically and the results have been presented in table-4.32. The main effects of different crop establishment and weed control practices also depicted graphically in Fig. 33. The analysis of variance have been given in Appendix-XXXIX for reference.

**Table 4.32 Effect of different crop establishment and various weed control practices on length of root in 2000 and 2001.**

A. Treatments	Length of root (cm)	
	2000	2001
T <sub>1</sub> Transplanting puddled	13.31	13.06
T <sub>2</sub> Transplanting unpuddled	13.10	12.7
T <sub>3</sub> Direct seeding unpuddled	12.85	12.51
SE (d)	0.09	0.06
CD (P=0.05)	0.22	0.16
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	13.03	12.58
W <sub>2</sub> Stale Seed bed	13.23	12.83
W <sub>3</sub> Stale seed bed followed by Chemical weed control	13.34	13.08
W <sub>4</sub> Stale Seed bed followed by hand weeding	13.50	13.27
W <sub>5</sub> Chemical weed control followed by hand weeding	13.65	13.46
W <sub>6</sub> Weed free check	13.96	13.74
W <sub>7</sub> Unweeded check	10.89	10.52
SE (d)	0.23	0.17
CD (P=0.05)	0.46	0.35
Interaction	N.S	N.S

### **A. Effect of crop establishment:**

The data pertaining in Table 4.32 showed that the different planting methods of Basmati rice were significantly influenced the root length in both years and the basmati rice was transplanted in puddled soil were registered significantly more root length followed by the basmati rice transplanted in upuddled soil over direct seeding method respectively in both the years.

### **B. Effect of weed control practices:**

It is evident from the result table 4.32 showed that the different wood control practices were significantly reflected the root length of basmati rice in both years and the weed free check was observed significantly more root length followed by chemical weed control followed by hand weeding over stale seed bed followed by hand weeding, stale seed bed followed chemical weed control, stale seed bed, chemical weed control and unweeded check respectively in both years.

## **2. Weight of root (g):**

The data regarding weight of root (g) were tabulated and analyzed statistically and the results have been presented in

Table 4.33. The main effect of different planting methods and various weed control practices also depicted in Fig. 34. The analysis of variance table have been in appendix-XXXX for reference.

**Table 4.33 Effect of different crop establishment and various weed control practices on weight of root (g) in 2000 and 2001**

A. <b>Treatments</b>	<b>Weight of root (g)</b>	
	<b>2000</b>	<b>2001</b>
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	2.29	2.21
T <sub>2</sub> Transplanting unpuddled	2.20	2.14
T <sub>3</sub> Direct seeding unpuddled	2.11	2.04
SE (d)	0.02	0.01
CD (P=0.05)	0.05	0.04
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	2.10	2.05
W <sub>2</sub> Stale Seed bed	2.15	2.10
W <sub>3</sub> Stale seed bed followed by Chemical weed control	2.24	2.18
W <sub>4</sub> Stale Seed bed followed by hand weeding	2.29	2.22
W <sub>5</sub> Chemical weed control followed by hand weeding	2.34	2.27
W <sub>6</sub> Weed free check	2.42	2.33
W <sub>7</sub> Unweeded check	1.85	1.77
SE (d)	0.05	0.04
CD (P=0.05)	0.09	0.07
Interaction	N.S	N.S

### **A. Effect of crop establishment:**

The data present in Table 4.33 revealed the different planting methods of basmati rice were significantly affected the weight of root in both the years of field trial and with transplanted of basmati rice in puddled soil was obtained significantly maximum root weight in both the years over the basmati rice was transplanted in unpuddled soil or direct seeding in unpuddled soil respectively in both years. The result table also indicate that the direct seeding in unpuddled soil was obtained significantly lowest root weight in both years.

### **B. Effect of weed control practices:**

Manifested the result table 4.33 revealed that the various weed control practices were significantly reflected the root weight in both the years and the weed free check was produced significantly maximum root weight followed by chemical weed control followed by hand weeding over stale seed bed followed by hand weeding, stale seed bed followed by chemical weed control, stale seed bed, chemical weed control or unweeded check respectively in both the years in field trial.

### **3. Volume of root CC:**

The data regarding the volume of root were tabulated and analyzed statistically and the results have been presented in

Table 4.34. The main effects of different planting methods also illustrated graphically in Fig. 35. The analysis of variance table have been in appendix-XXXXI for reference.

**Table 4.34 Effect of different crop establishment and various weed control practices on root volume in 2000 and 2001**

A. <b>Treatments</b>	<b>Root weight (cc.)</b>	
	<b>2000</b>	<b>2001</b>
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	6.09	6.03
T <sub>2</sub> Transplanting unpuddled	6.00	5.94
T <sub>3</sub> Direct seeding unpuddled	5.93	5.87
SE (d)	0.05	0.05
CD (P=0.05)	0.13	0.12
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	5.82	5.78
W <sub>2</sub> Stale Seed bed	5.91	5.86
W <sub>3</sub> Stale seed bed followed by Chemical weed control	6.00	5.94
W <sub>4</sub> Stale Seed bed followed by hand weeding	6.09	6.02
W <sub>5</sub> Chemical weed control followed by hand weeding	6.20	6.12
W <sub>6</sub> Weed free check	6.29	6.21
W <sub>7</sub> Unweeded check	5.75	5.70
SE (d)	0.11	0.90
CD (P=0.05)	0.22	0.18
Interaction	N.S	N.S



#### **A. Effect of crop establishment:**

It is manifested the result table 4.34 clearly showed that the different planting methods of basmati rice significantly reflected the root volume in both years, and the basmati rice was transplanted in puddled soil were obtained significantly maximum root volume followed by the basmati rice transplanted in unpuddled soil over direct seeding in unpuddled soil respectively in both the years of field trial.

#### **B. Effect of weed control practices:**

It is evident from the result table 4.34 revealed that the various weed chemical practices were significantly influenced the root volume of basmati rice in both the years and the weed free check was noticed the significantly more root volume over chemical weed control followed by hand weeding, stale seed bed followed by chemical weed control, stable seed bed, chemical weed control or unweeded check. The results also indicate that the unweeded check was produced significantly lowest root volume in both the years of field trial.

#### **H. ECONOMICS;**

##### **1. Cost of cultivation (Rs./ha):**

After calculating the cost of cultivation of were presented in table 4.35.

**Table 4.35 Cost of cultivation (Rs./ha)**

A. <b>Treatments</b>	<b>Root weight (cc.)</b>	
	<b>2000</b>	<b>2001</b>
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	32564.00	33026.00
T <sub>2</sub> Transplanting unpuddled	31934.00	32434.00
T <sub>3</sub> Direct seeding unpuddled	30434.00	30934.00
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	30040.00	30540.00
W <sub>2</sub> Stale Seed bed	31005.00	31505.00
W <sub>3</sub> Stale seed bed followed by Chemical weed control	32180.00	32680.00
W <sub>4</sub> Stale Seed bed followed by hand weeding	33003.00	33503.00
W <sub>5</sub> Chemical weed control followed by hand weeding	33576.00	33988.00
W <sub>6</sub> Weed free check	34540.00	35040.00
W <sub>7</sub> Unweeded check	27163.00	27663.00

**A. Effect of crop establishment:**

The data pertaining in table 4.35 showed that the cost of cultivation were maximum in the basmati rice was transplanted in puddle soil over the rice was transplanted in unpuddled soil and direct seeding in unpuddled soil in the years.

**B. Effect of weed control practices:**

The data table 4.35 clearly indicate that the weed free check was calculated maximum cost of cultivation in both the years and the unweeded check was calculated lowest cost of cultivation in both years.

## 2. Gross income (Rs./ha):

After calculating the gross income (treatment viz.) analyzed statistically and the result have been presented in table 4.36. The main effects of different crop establishment and various weed control practices were also depicted graphically in Fig. 36. The analysis of variance have been given in appendix-XXXXII for reference.

**Table 4.36 Effect of different crop establishment and various weed control practices on root volume in 2000 and 2001**

A. Treatments	Gross income (Rs./ha)	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	54882.00	53001.00
T <sub>2</sub> Transplanting unpuddled	53079.00	50757.00
T <sub>3</sub> Direct seeding unpuddled	51681.00	49291.00
SE (d)	415.00	410.00
CD (P=0.05)	1016.00	1004.00
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	53084.00	50544.00
W <sub>2</sub> Stale Seed bed	53681.00	51195.00
W <sub>3</sub> Stale seed bed followed by Chemical weed control	54617.00	51992.00
W <sub>4</sub> Stale Seed bed followed by hand weeding	5509.00	52487.00
W <sub>5</sub> Chemical weed control followed by hand weeding	55998.00	53279.00
W <sub>6</sub> Weed free check	56822.00	54343.00
W <sub>7</sub> Unweeded check	43237.00	41391.00
SE (d)	1127.00	1110.00
CD (P=0.05)	2258.00	2225.00
Interaction	N.S	N.S

#### **A. Effect of crop establishment:**

It is clear from the result table 4.36 showed that the different planting methods of basmati rice were significantly influenced the gross income (Rs./ha) in both years and the basmati rices transplanted in puddled soil was gave significantly highest gross income over the rice was transplanted in unpuddled soil or direct seeding in unpuddled soil respectively in both years.

#### **B. Effect of weed control practices:**

It is evident from the result table 4.36 showed that the various weed control practices were significantly affected the gross income (Rs./ha) in both the years and the weed free check was produced significantly more gross income (Rs./ha) over rest weed control practices in both years. The chemical weed control followed by hand weeding, Stale seed bed followed by hand weeding and stale seed bed followed by hand weeding were found at par, but they are significantly superior over stale seed bed chemical weed control and unweeded check respectively.

#### **3. Net Income (Rs./ha):**

After deducting the cost of cultivation from gross income in both years were analyzed statistically and the result have been presented in table 4.37. The main effects of different crop

establishment and weed control practices were illustrated graphically in Fig. 37. The analysis of variance have been given in appendix-XXXXIII for reference.

**Table 4.37 Effect of different crop establishment and various weed control practices on Net Income (Rs./ha) in 2000 and 2001**

Treatments	Net Income (Rs./ha)	
	2000	2001
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	22356.00	19169.00
T <sub>2</sub> Transplanting unpuddled	21149.00	18323.00
T <sub>3</sub> Direct seeding unpuddled	21247.00	18357.00
SE (d)	338.00	1650.00
CD (P=0.05)	827.00	4020.00
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	23062.00	20004.00
W <sub>2</sub> Stale Seed bed	22676.00	19690.00
W <sub>3</sub> Stale seed bed followed by Chemical weed control	22437.00	19312.00
W <sub>4</sub> Stale Seed bed followed by hand weeding	22046.00	18384.00
W <sub>5</sub> Chemical weed control followed by hand weeding	22510.00	19291.00
W <sub>6</sub> Weed free check	22282.00	19303.00
W <sub>7</sub> Unweeded check	16075.00	13729.00
SE (d)	467.00	937.00
CD (P=0.05)	434.00	870.00
Interaction	N.S	N.S

#### **A. Effect of crop establishment:**

It is evident from the result table 4.37 showed that the different planting methods were significantly reflected the net profit (Rs./ha) in both the years and the planting method of basmati rice was transplanted in puddled soil registered significantly more net profit over the direct seeding or transplanted in unpuddled soil respectively in both the years.

#### **B. Effect of weed control practices:**

Manifested the result table 4.37 showed that the various weed control practices were significantly affected the net profit and the chemical weed control gave significantly more net profit/ ha in both the years over W<sub>2</sub>, W<sub>3</sub>, W<sub>6</sub>, W<sub>4</sub> and W<sub>7</sub> but W<sub>2</sub>, W<sub>3</sub>, W<sub>6</sub>, W<sub>5</sub> and W<sub>4</sub> found at par in both the years but significantly superior over W<sub>7</sub> respectively.

#### **4. Benefit cost ratio:**

After calculating the benefit cost ratio were analyzed statistically and the result have been presented in table 4.38, and the main effects of planting methods and weed control practices also depicted in Fig. 38. The analysis of variance have been given in appendix-XXXXIV for reference.

**Table 4.38 Effect of different crop establishment and various weed control practices on benefit cost ratio in 2000 and 2001**

A. <b>Treatments</b>	<b>Benefit cost ratio</b>	
	<b>2000</b>	<b>2001</b>
<b>A. Crop establishment</b>		
T <sub>1</sub> Transplanting puddled	1.69	1.58
T <sub>2</sub> Transplanting unpuddled	1.68	1.56
T <sub>3</sub> Direct seeding unpuddled	1.70	1.59
SE (d)	0.01	0.01
CD (P=0.05)	0.03	0.02
<b>B. Weed Control Practices</b>		
W <sub>1</sub> Chemical weed control	1.77	1.65
W <sub>2</sub> Stale Seed bed	1.73	1.62
W <sub>3</sub> Stale seed bed followed by Chemical weed control	1.70	1.59
W <sub>4</sub> Stale Seed bed followed by hand weeding	1.67	1.57
W <sub>5</sub> Chemical weed control followed by hand weeding	1.67	1.57
W <sub>6</sub> Weed free check	1.65	1.55
W <sub>7</sub> Unweeded check	1.59	1.50
SE (d)	0.02	0.02
CD (P=0.05)	0.05	0.04
Interaction	N.S	N.S

**A. Effect of crop establishment:**

It is evident from the result table 4.38 showed that the various planting methods of basmati rice were significantly reflected the benefit cost ratio in both the years and the direct

seeding in unpuddled soil registered significantly higher benefit cost ratio followed by the rice transplanted in puddled soil and unpuddled soil respectively in both the years.

**B. Effect of weed control practices:**

Perusal of the data in table 4.38 showed that the various weed control practices were significantly influenced the benefit cost ratio in both the years and the chemical weed control practice was registered significantly more benefit cost ratio followed by stale seed bed over stale seed bed followed by chemical weed control, stale seed bed followed by hand weeding, chemical weed control followed by hand weeding weed free check and unweeded check respectively in both the years. The unweeded check was produced significantly lowest benefit cost ratio in both the years.

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