Genotypes had significant effect on the yield attributes and grain yield of rabi sorghum (Table 1). Ear weight, grain weight per ear and test weight were significantly higher in CSH-15 R, compared to SPV-1155 and M-35-1. Because of higher ear weight, grain weight/ear and test weight, the grain yield of rabi sorghum was significantly highest in genotype CSH-15 R. Pawar et al. (1996) also observed that ear head weight, test weight and number of grains/ear head are the major yield contributors for improvement in grain yield of rabi sorghum under dryland conditions. Higher grain yield of CSH-15 R over other varieties was also reported by Narkhede et al. (1997) under dryland conditions of Rahuri (Maharashtra).

The yield attributes viz. ear weight, grain weight/ear and test weight were significantly affected by different levels of nitrogen (Table 1). Application of 60 kg N ha⁻¹ showed higher yield attributing characters over no nitrogen while ear weight and grain weight/ear was on par with 30 and 90 kg N ha⁻¹. Plant height remained unaffected by different N levels.

Non significant differences in grain and stover yield were noticed under different N levels tried however, 60 kg N ha⁻¹ recorded more grain and stover yield over higher and lower level of N tried. The application of 60 kg N ha⁻¹ increased the grain and stover yield by 25 and 11 per cent respectively over 0 kg N ha⁻¹. Since grain yields are mainly governed by moisture supply to the crop under rabi rainfed conditions which might be the reason for non significant differences in grain and stover yield due to N level. Jadhav et al. (1991) also reported that application of nitrogen significantly increased grain and fodder yield except during low rainfall years.

There was no interaction between genotypes and nitrogen. Daftardar et al. (1987) recorded similar observations at Solapur (Maharashtra). It can be concluded from the study that the rabi genotype CSH-15 R found suitable for rain dependent area, however, under limited moisture situation N level did not showed any effect on increasing yield of rabi sorghum.

References


(Received: October 2000; Revised: May 2001)

Weed control in direct seeded puddled rice

N. TAMILSELVAN AND M.N. BUDHAR
Regional Research Station, Tamil Nadu Agri. University Paiyur – 635 112, Tamil Nadu.

The economic factors and recent changes in rice production technology have improved the desirability of direct seeding of rice under puddled condition, although transplanting is a major traditional method of crop establishment. Weed competition is a major constraint in the productivity of direct seeded puddled rice. Weeds alone have been reported to reduce the yield by 50-60 percent in direct sown rice. Angiras and Rana (1998) reported that Butachlor @ 2.0 kg a.i ha⁻¹ was found to control the weeds effectively besides increasing the yield under direct seeded puddled rice. Dhiman and Nandal (1996) reported that the Butachlor 1.0 kg a.i ha⁻¹ combined with one hand weeding found to control the weeds effectively in direct sown rice. Therefore, the present study was undertaken with a view to evaluate the performance of different pre emergence herbicides for effective weed control in direct seeded puddled rice.

A field experiment was conducted in red sandy loam soil during Samba (Aug-Dec) 1999 at Regional Research Station, Paiyur under direct seeded puddled condition. Pre emergence herbicides
Table 1. Effect of weed control treatment on weed population, yield attributes and yield of direct seeded puddled rice

<table>
<thead>
<tr>
<th>T. No.</th>
<th>Treatment details</th>
<th>No. of weeds per m² (gm/m²)</th>
<th>Dry weight of weeds (gm/m²)</th>
<th>Productive tillers/ hill (No.)</th>
<th>Total grains/ panicle (No.)</th>
<th>Filled grains/ panicle (No.)</th>
<th>Test weight (g)</th>
<th>Grain yield (kg ha⁻¹)</th>
<th>Straw yield (kg ha⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Unweeded check</td>
<td>1.47 (29.5)</td>
<td>1.49 (31.4)</td>
<td>8.8</td>
<td>109.6</td>
<td>87.7</td>
<td>16.65</td>
<td>3861</td>
<td>8236</td>
</tr>
<tr>
<td>T2</td>
<td>Hand weeding</td>
<td>1.26 (18.3)</td>
<td>1.36 (23.3)</td>
<td>11.9</td>
<td>142.3</td>
<td>117.4</td>
<td>16.42</td>
<td>5324</td>
<td>8568</td>
</tr>
<tr>
<td>T3</td>
<td>Butachlor 1.0 kg ai/ha</td>
<td>1.22 (16.8)</td>
<td>1.29 (19.6)</td>
<td>11.5</td>
<td>128.1</td>
<td>105.9</td>
<td>16.67</td>
<td>5023</td>
<td>8948</td>
</tr>
<tr>
<td>T4</td>
<td>Butanil 1.0 kg ai/ha</td>
<td>1.07 (12.1)</td>
<td>1.27 (18.7)</td>
<td>13.3</td>
<td>161.5</td>
<td>122.1</td>
<td>16.63</td>
<td>5439</td>
<td>9606</td>
</tr>
<tr>
<td>T5</td>
<td>Pretilachlor 0.40 kg ai/ha</td>
<td>1.11 (12.9)</td>
<td>1.15 (14.2)</td>
<td>14.2</td>
<td>160.8</td>
<td>126.3</td>
<td>16.84</td>
<td>5440</td>
<td>9629</td>
</tr>
<tr>
<td>T6</td>
<td>Pretilachlor + safener 0.4 kg ai/ha</td>
<td>1.26 (18.1)</td>
<td>1.27 (19.0)</td>
<td>11.2</td>
<td>131.6</td>
<td>106.3</td>
<td>16.58</td>
<td>5185</td>
<td>9379</td>
</tr>
<tr>
<td>T7</td>
<td>Anilophos 0.3 kg ai/ha</td>
<td>1.15 (14.3)</td>
<td>1.16 (14.5)</td>
<td>14.1</td>
<td>166.9</td>
<td>131.7</td>
<td>16.48</td>
<td>5440</td>
<td>9384</td>
</tr>
<tr>
<td>CD at 5%</td>
<td></td>
<td>0.09</td>
<td>0.13</td>
<td>2.0</td>
<td>20.6</td>
<td>17.1</td>
<td>NS</td>
<td>317</td>
<td>NS</td>
</tr>
</tbody>
</table>

Figures in parenthesis indicates the original values

viz. Butachlor (T₃), Butanil (T₄), Pretilachlor (T₅), Pretilachlor + safener (T₆) and Anilophos (T₇) were compared against hand weeding (T₂) and unweeded check (T₁). The trial was laid out in randomized block design with three replications. The test variety was ADT 43. The sprouted seeds were direct seeded through drum seeder. All the herbicides were applied on 8th day after sowing of sprouted seeds. The weed species found in the experimental field were *Cyperus rotundus*, *C. iria*, *C. diurnis*, *Cyanodon dactylon*, *Echinochloa crassgalli*, *E. Colona*, *Marsilea quadrifoliiata* and *Eclipta alba*.

The number and dry weight of weeds on 40 DAS were significantly less in herbsicides applied treatments (T₃ to T₇) compared to unweeded check (T₁) and hand weeding (T₂) (Table. 1). The productive tillers per hill was significantly higher in Anilophos (T₇) and Pretilachlor (T₅) and it was on par with Butanil (T₄). The total and filled grains per panicle were significantly high in Anilophos (T₇) and was on par with that of Butanil (T₄) and Pretilachlor (T₅). No significant difference was recorded in test weight and straw yield. The grain yield was significantly increased by the application of herbicides (T₃ to T₇) and hand weeding (T₂) compared to unweeded check (T₁). Application of Anilophos (T₇), Pretilachlor (T₅) and Butanil (T₄) recorded the maximum grain yield of 5.44 t ha⁻¹ each and was on par with hand weeding (T₂) (5.33 t ha⁻¹) Pretilachlor plus safener (T₆) (5.19 t ha⁻¹) and Butachlor (T₄) (5.02 t ha⁻¹).

In general, application of pre-emergence herbicides increased the grain yield by 30 to 41 per cent over unweeded check.

Hence, it could be concluded that the pre-emergence herbicides viz. Anilophos or Pretilachlor @ 0.3 kg ai ha⁻¹ each or Butanil @ 1.0 kg ai ha⁻¹ may be applied on 8th day after sowing in direct seeded puddled rice.

References


(Received: April 2000; Revised: March 2001)