INTRODUCTION

- Sorghum (Sorghum bicolor (L.) Moench) is the fifth most important cereal crop in the world after wheat, rice, maize, and barley, and ranks fifth in production next to maize, wheat, rice and barley (FAOSTAT 2021).
- The five largest producers of sorghum in the world are the United States of America, Nigeria, India, Ethiopia and Mexico (FAOSTAT 2021) while Ethiopia is the second largest producing country from Africa. In Ethiopia, it is primarily used for making different kinds of foods such as Injera, Porridge, “Nefroo”, infant food, syrup, and beverages like “Tella” and “Areek”.
- In eastern Hararghe Zone of Oromia region, sorghum ranks first in area coverage and production (CSA 2020/21).
- However, the lowland agro-pastoral districts of the Zone (the study area) are characterized by frequent drought episodes due to insufficient amount and erratic distribution of rainfall.
- In consequence, crop failure and death of livestock are common phenomena in these areas; leaving the households chronically food insecure.
- Moreover, farmers in these districts have limited access to improved crop and livestock production technologies.
- Sorghum is the best alternative crop to introduce in to such drought prone areas compared to other cereals.

Objective

- To identify adapted and productive varieties of sorghum for moisture stressed lowland districts of East Hararghe

MATERIALS & METHODS

Study site:

- The study was conducted at six locations in four districts of East Hararghe including Golma Oda (Burka and Goro Abu), Qumbi (Harirro and Mino), Midhaga Tola and Fedis (on-station).
- The experimental materials consisted of nine early maturing sorghum varieties + one local check
- Experimental design: CBCD with three replications. Plot size: 3m x 3m= 9m²

Spacing: 75 cm between rows and 25cm between plants within rows

Agronomic management:

- Blended NPS fertilizer and Urea were applied uniformly to all experimental units.
- Urea was applied in split, half at planting and half at knee height stage
- All other cultural practices were applied as per the recommendations for the crop

Data were collected on the following traits

- Seedling vigor
- Days to maturity
- Plant height
- Drought tolerance score
- Insect infestation score (Stalk borer/AFW)
- Stay green character

Data Analysis: ANOVA and descriptive statistics were used for data analysis

RESULTS AND DISCUSSION

Overall performance evaluation (Pass/Fail score)

- A subjective evaluation for overall field performance was done based on a standard 1-5 scale (1=best, 5=worst)
- A variety with a score of 1-2.5 was considered best and passed with confidence
- A variety with a score of 3 was selected for further evaluation
- A variety with a score of 5 was rejected (total failure with no yield)

Yield components

- As shown in the figures, the varieties Abishir (3.5-4.7) and Gubiye (3.3-5.0) showed relatively poor overall field performance at all sites.
- All other varieties showed good overall performances at all sites, except Erer-01 (3.83) and Fedis-01 (3.2) at Goro Abu, and Deka at Burka and Midhaga.

The varieties showed significant differences in yield and yield related traits (Tables 1 & 2)

Table 1. Mean values of some agronomic traits of sorghum adaptation trial at Fedis, 2022

<table>
<thead>
<tr>
<th>Variety</th>
<th>PH (cm)</th>
<th>DM</th>
<th>Head Wt/plot</th>
<th>TKW</th>
<th>Yield (kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abishir</td>
<td>144.00</td>
<td>91</td>
<td>116.00</td>
<td>13.67</td>
<td>176.00</td>
</tr>
<tr>
<td>Argity</td>
<td>170.67</td>
<td>115.00</td>
<td>126.33</td>
<td>24.57</td>
<td>180.00</td>
</tr>
<tr>
<td>Dekahe</td>
<td>121.67</td>
<td>118.00</td>
<td>116.00</td>
<td>3.33</td>
<td>20.00</td>
</tr>
<tr>
<td>Ecer-01</td>
<td>170.80</td>
<td>119.33</td>
<td>1.80</td>
<td>21.67</td>
<td>145.30</td>
</tr>
<tr>
<td>Melkam</td>
<td>139.33</td>
<td>112.33</td>
<td>4.27</td>
<td>3.67</td>
<td>23.46</td>
</tr>
<tr>
<td>Teshale</td>
<td>156.33</td>
<td>110.33</td>
<td>4.03</td>
<td>5.00</td>
<td>27.92</td>
</tr>
<tr>
<td>Tilahun</td>
<td>151.67</td>
<td>118.00</td>
<td>1.27</td>
<td>25.67</td>
<td>132.90</td>
</tr>
</tbody>
</table>

Based on grain yield at Fedis, the varieties Teshale, Dekahe, and Melkam can be recommended for production.

REFERENCES

2. FAOSTAT 2021, Food and Agricultural Organization of the United Nations,Viale delle Terme di Caracalla 00153 Rome, Italy

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