Spate Irrigation: Sorghum
Introduction

• The potential of sorghum is relatively undeveloped
• Has a remarkable array of untapped variability in grain type, plant type, adaptability, and productive capacity

**Why is it useful?**

• Grows on a large range of soil types and is more tolerant to salinity than maize
• Drought and heat tolerant and more efficient in water and

<table>
<thead>
<tr>
<th>Country</th>
<th>Sorghum usage</th>
<th>Yield (kg/ha)</th>
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<tbody>
<tr>
<td>Ethiopia</td>
<td>Sorghum (grain)</td>
<td>1000-1500 (Steduto et al. 2012)</td>
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<tr>
<td>Eritrea</td>
<td>Sorghum (grain)</td>
<td>800-3750 (Van Steenbergen et al. 2010)</td>
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<td>Pakistan</td>
<td>Sorghum (grain)</td>
<td>360-550 (Van Steenbergen et al. 2010)</td>
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<td>Sorghum (fodder)</td>
<td>1500-4800 (Van Steenbergen et al. 2010)</td>
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<td>Sudan</td>
<td>Sorghum (grain)</td>
<td>600 (Steduto et al. 2012)</td>
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<td>Yemen</td>
<td>Sorghum (grain)</td>
<td>600-3500 (Van Steenbergen et al. 2010)</td>
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<td></td>
<td>Sorghum (fodder)</td>
<td>810-11500 (Van Steenbergen et al. 2010)</td>
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*Table 1: Sorghum yield per country (kg/ha)*
Best practices: Eritrea

• High yields due to highly efficient moisture management
• Land is ploughed before the irrigation season to open up the soil
• After the fields are irrigated, farmers plough again and carefully mulch the soil
• Ploughing and mulching is done twice – this assures soil moisture is preserved for several months
Sorghum varieties

- **‘Tetron’**:  
  - Gives high yields  
  - Good resistance to drought and pest infection

- **‘Hejeri’**:  
  - Well-branched root system  
  - High yielding, short stalked and is very efficient at extracting residual moisture from the soil (good ratoonability)

- **‘Feterita’**: A white grain variety – produces darker flour  
  - Short growing season and short stalks  
  - Has less bird problems
Sorghum varieties

• ‘Hartsetsa’: A red grain variety – produces a greyish flour
  • Growing cycle of three months
  • Has an intermediate stalk, compact head, a high yielding but a poor ratoonability
  • Good for human consumption

• ‘Durra’: A tall, open headed and early maturing variety
  • Good ratooninability
  • Seeds are red
  • Has a low yielding and is more cultivated as animal feed than for human consumption
Recommendations

- Intercropping with legumes and use of fertilizer
- Water conserving techniques
  - Providing adequate moisture helps to double sorghum yields.
  - Land is ploughed prior to the irrigation season to “open up the soil”
- Command area is also kept relatively compact
- Improve row planting
- Reduce plant density
- Improved grain storage