Testing Adaptation in Flood Based Livelihoods System
Onsite Production & Remote Monitoring of Seredo Sorghum in Kamukuru village, Kajiado County - Kenya.

Celestine Kilongosi
Alex R. Oduor & Maimbo Malesu
Water Management Unit
World Agroforestry Centre (ICRAF)

Evans Onyango
Pixiniti Studios
Nairobi
Rationale for FBLS in the ASALs

- Low rainfall but massive untapped flood water resources in flood plains of Kenya’s ASALs.
- High Temperatures: - 27°C to > 40°C - conducive for high biomass production through high evapotranspiration
- Drought tolerant crops such as Sorghum and Calotropis are resilient to such environments.
- EABL contracting farmers in Kenya to grow Sorghum for beer production from seed and animal fodder from stalk.
Methodology

YL – 69 soil moisture sensors

Depths

• 20 cm
• 40 cm
• 80 cm

ThingView application
Photos depicting field research preparation
Installation of weather based, soil moisture & spate-flow instruments

Installation of soil moisture sensors to the motherboard

Layout of the research plots
12 Plot treatments: Conventional practice, mulch, furrows & mulch + furrows each with 20, 50 & 80cm soil moisture sensors
Results

Min  5.0 on 02 Nov 16:25  Max  56.0 on 24 Oct 09:29
Last  6.0 on 27 Nov 21:30
Good harvest achieved across all the plots with mulch treatment & furrow treatments having best results.
The RM improves the productivity by 55.8% as compared to the control.

<table>
<thead>
<tr>
<th>Plot treatment</th>
<th>Yield (kg/ha) Per Block</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Control (C)</td>
<td>3600</td>
<td>8800</td>
</tr>
<tr>
<td>Mulch (M)</td>
<td>7000</td>
<td>8600</td>
</tr>
<tr>
<td>Mulch &amp; Ridges (RM)</td>
<td>5000</td>
<td>16000</td>
</tr>
<tr>
<td>Ridges (R)</td>
<td>3600</td>
<td>11500</td>
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</tbody>
</table>
Yield per Block Series in Kg/ha.

- Block 3 is independent and on the upstream side of Blocks 1 & 2.
- Block 3 is independent and on the upstream side of Blocks 1 & 3.
- The channel conveying water to block 1 is smaller than that of Blocks 1 & 2.
- Yield in Block 2 is generally higher than those of blocks 1 & 3. This is attributed to the fact that Block 2 on the downstream with Block one.
- RM is the best performing treatment
- The RM improves the productivity by 55.8% as compared to the control.
On average, RM performs better followed by Ridges then mulch.
The RM improves the productivity by 55.8% as compared to the control.
Neighbouring farmers adopt FBFS whilst the research & demonstration is still on going
Conclusion

• The use of mobile phone to remotely monitor weather parameters, soil moisture and spate in-flows eases field operations.
• It is a step towards precision farming in Africa. In the Billion Business Alliance in RWH Mobile application dubbed the HoPPA, is being used to monitor runoff inflows into ponds, turbidity of water and soil moisture conditions.
• The phones can now remotely be used to start or stop irrigation as set and influenced by soil moisture conditions.
• Moisture conservation measures are highly recommended esp. the combined ridges and mulch
END
THANK YOU!!