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

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Rationale

• Massive untapped flood water resources in flood plains of Kenya’s ASALs.
• Temperatures are high - 120°C to 340°C
• Rainfall- average 600 mm
• Crops such as Sorghum and Calotropis are resilient to such environments.
• EABL contracting farmers in Western Kenya to grow Sorghum for beer production
Background

• Research conducted in Kajiado County, Kenya in 2017. Area is ASAL; average rainfall 600 mm and faces frequent flash floods which last a few days.

• However with conservation techniques, the moisture can be retained for longer period for agricultural production.

• The techniques applied were: Ridges, mulching, combined ridges & mulch and conventional measures.

• Weather & soil moisture sensors were installed to monitor; moisture, flow rate & weather parameters.

• Finally water productivity was assessed for every conservation technique.
• YL – 69 soil moisture sensors
• ThingView application

 Depths
• 20 cm
• 40 cm
• 80 cm
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 11.0 on 22 Nov 19:42  Max 81.0 on 24 Oct 04:42
Last 11.0 on 22 Nov 19:42
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>
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<th></th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control (C)</td>
<td>3600</td>
<td>8800</td>
<td>3200</td>
<td>5200</td>
<td></td>
</tr>
<tr>
<td>Mulch (M)</td>
<td>7000</td>
<td>8600</td>
<td>3800</td>
<td>6500</td>
<td></td>
</tr>
<tr>
<td>Mulch &amp; Ridges (RM)</td>
<td>5000</td>
<td>16000</td>
<td>3400</td>
<td>8100</td>
<td></td>
</tr>
<tr>
<td>Ridges (R)</td>
<td>3600</td>
<td>11500</td>
<td>6100</td>
<td>7100</td>
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</tr>
</tbody>
</table>
Neighbouring farmers adopt FBFS whilst the research & demonstration is still on going
Conclusion

• The use of telemetric system to remotely monitor weather parameters, soil moisture and spate in-flows eases field operations.

• It is a step towards precision farming in Africa as the phones can now be remotely used to automate irrigation scheduling as set and influenced by a number of related soil, water and weather conditions and thus boost yields / water productivity

https://drive.google.com/file/d/118CDJS8YFnJVM7yCndgqgxcoyuupDBYC/view?usp=sharing