

# 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 for FBLS in the ASALs

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- Low rainfall but massive untapped flood water resources in flood plains of Kenya's ASALs.
- High Temperatures: - 27<sup>0</sup>C to > 40 <sup>0</sup>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.

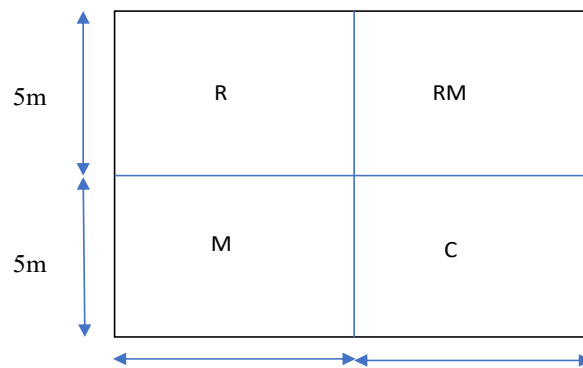
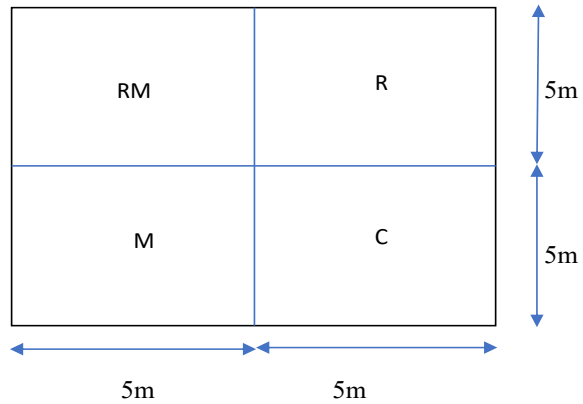
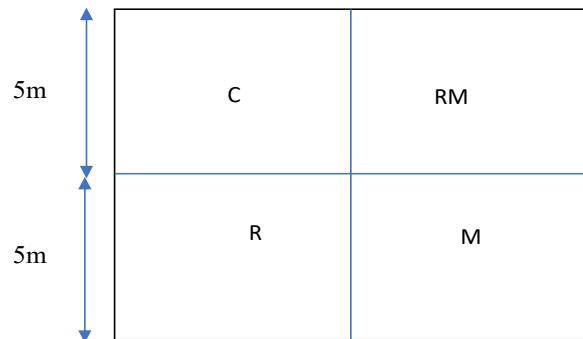
# Methodology

YL – 69 soil moisture sensors

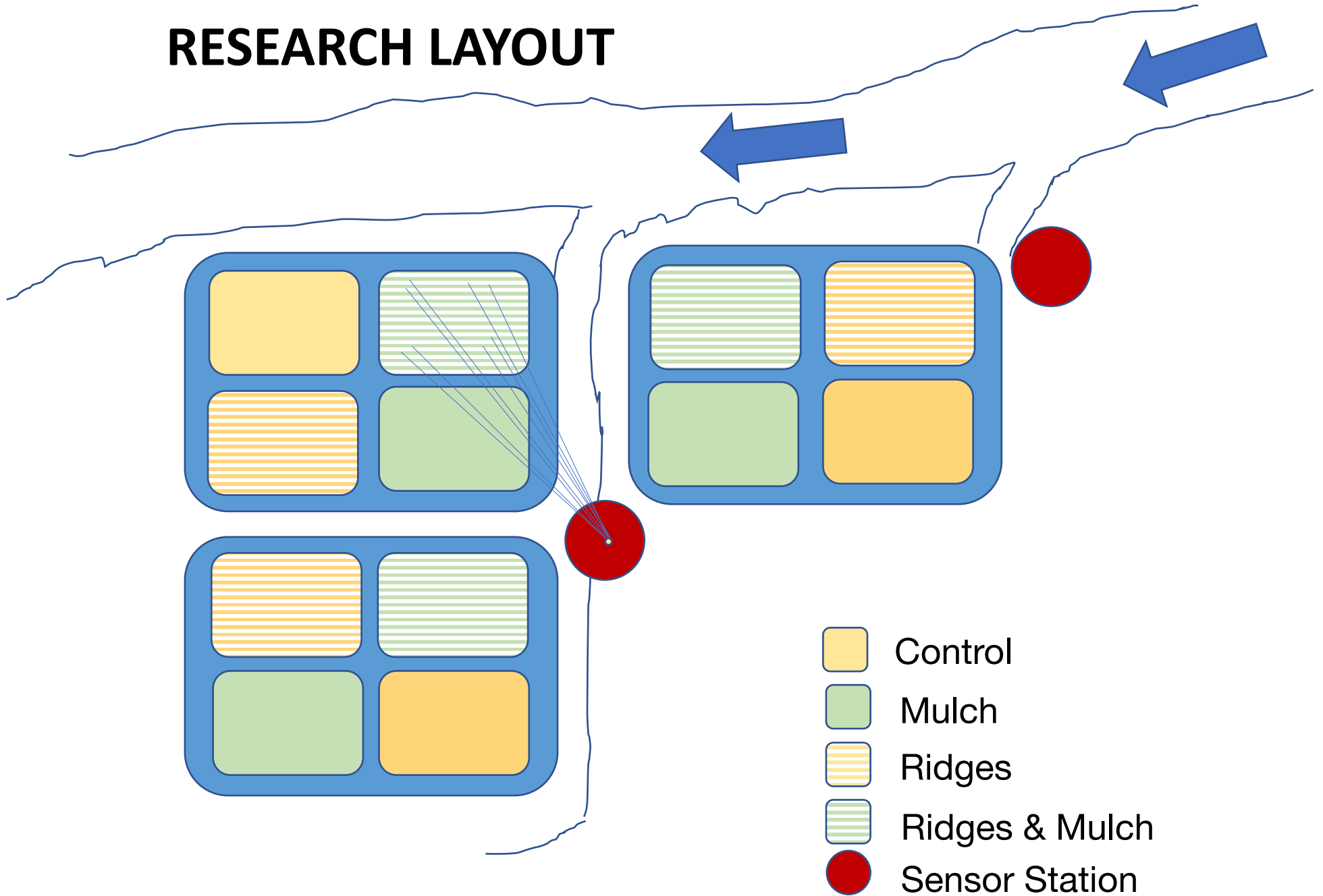
Depths

- 20 cm
- 40 cm
- 80 cm

ThingView application



# RESEARCH LAYOUT





# Photos depicting field research preparation





# Installation of weather based, soil moisture & spate-flow instruments



*Installation of soil moisture sensors to the motherboard*



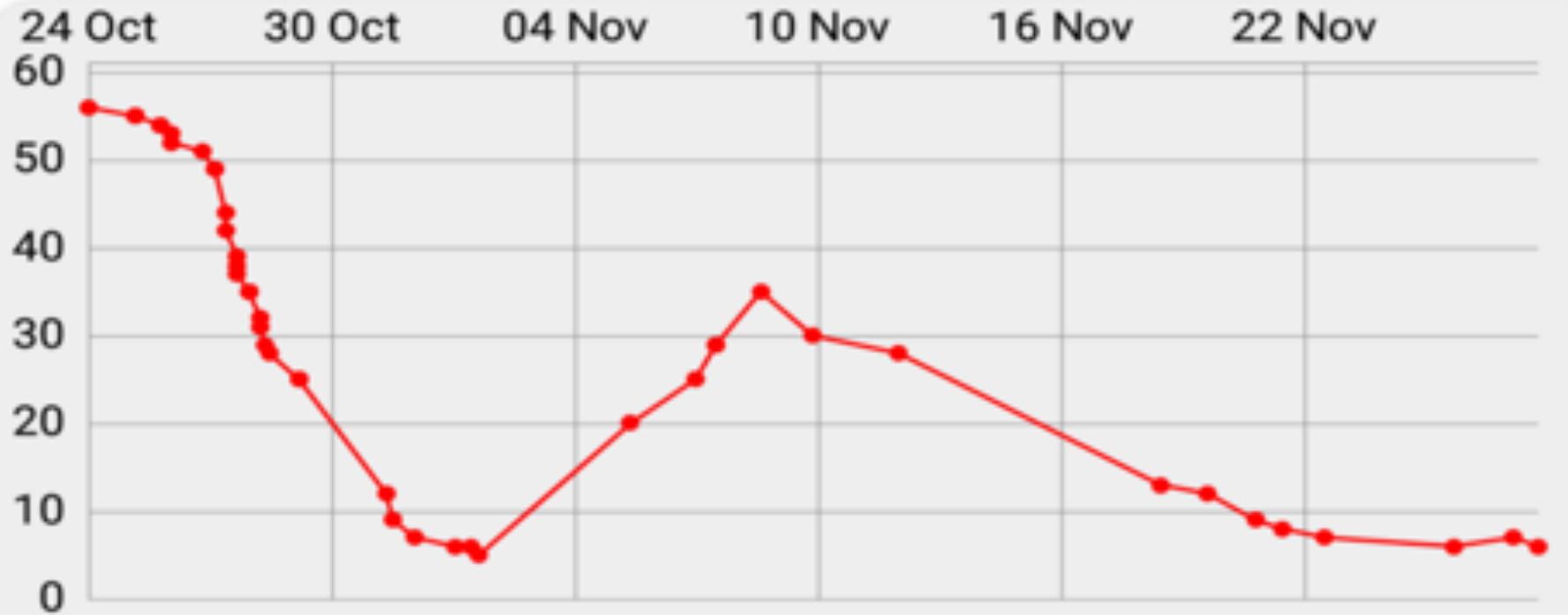
*Layout of the research plots*



12 Plot treatments: Conventional practice, mulch, furrows & mulch + furrows  
each with 20, 50 & 80cm soil moisture sensors



# Results



— b3-a20

Min 5.0 on 02 Nov 16:25 Max 56.0 on 24 Oct 09:29

Last 6.0 on 27 Nov 21:30



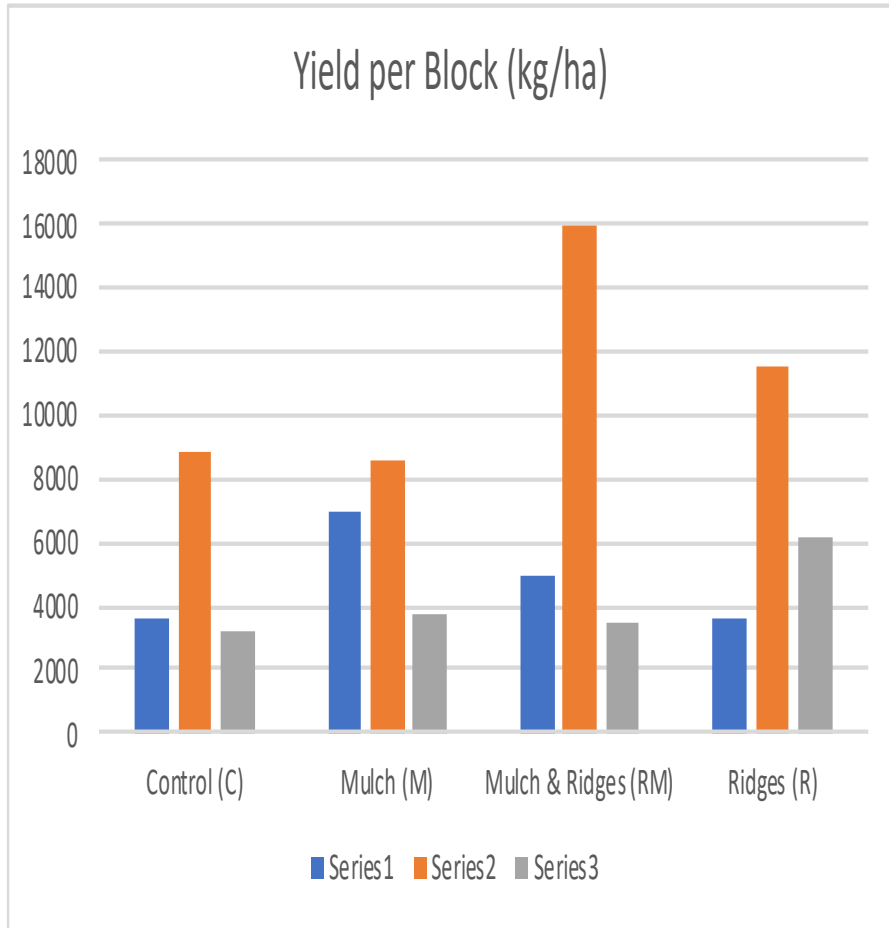
Good harvest achieved across all the plots with mulch treatment & furrow treatments having best results



The RM improves the productivity by 55.8% as compared to the control.

Plot treatment	Yield (kg/ha) Per Block			Average
	1	2	3	
Control (C)	3600	8800	3200	5200
Mulch (M)	7000	8600	3800	6500
Mulch & Ridges (RM)	5000	16000	3400	8100
Ridges (R)	3600	11500	6100	7100

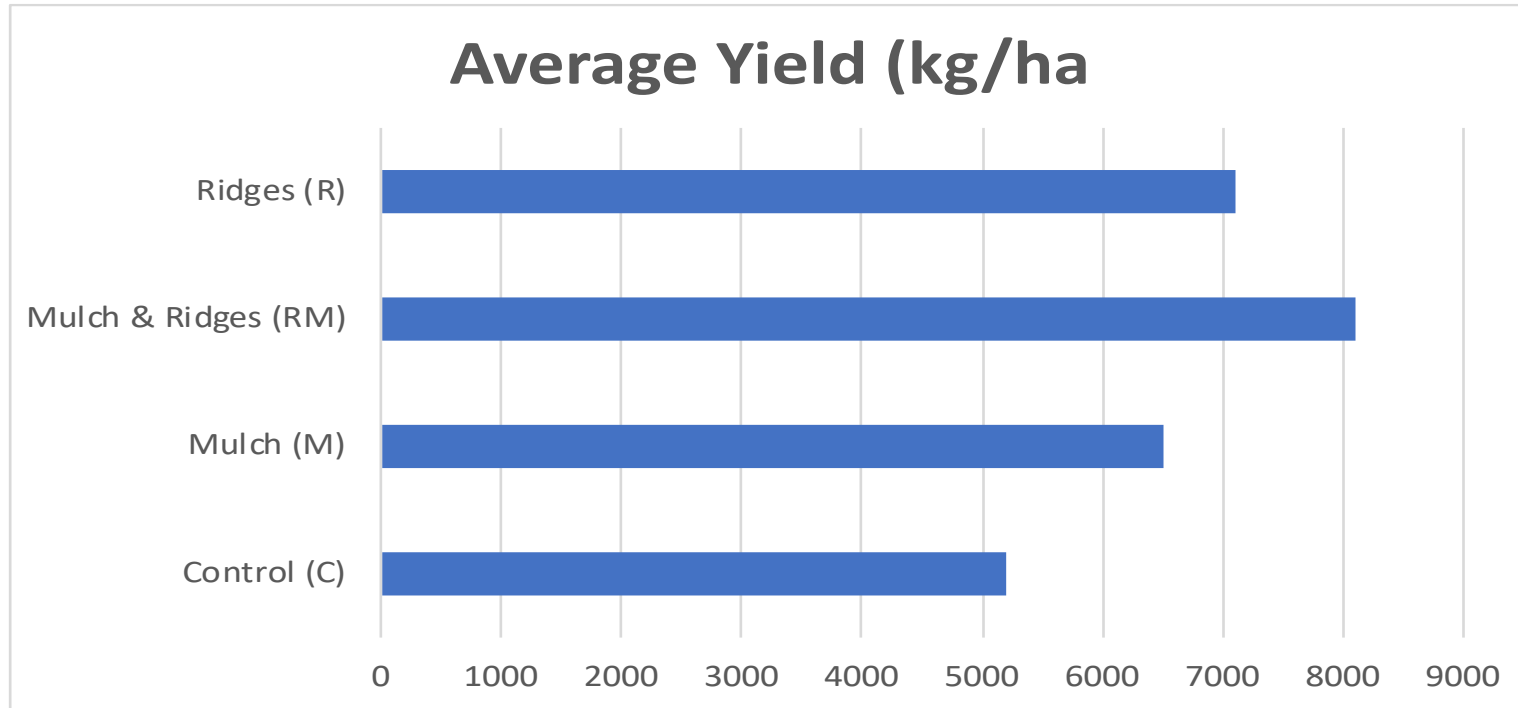
# Yield per Block Series in Kg/ha.



- 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.
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# Yield per Block Series in Kg/ha.



- 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!!