MALTED SORGHUM AND ADJUNCT BREWING POTENTIALS OF LOCAL AND IMPROVED SORGHUM GENOTYPES

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INTRODUCTION

- Alternative cereals to barley for malting & brewing are essential due to climate change, non-viable cultivation of barley in tropical & sub-tropical [1].

- Sorghum malt starch has higher gelatinization temperature than barley malt starch. This adversely influences starch hydrolysis by malt α-amylase [2] and exacerbated by disulfide bond mediated cross-linking of prolamins that limit starch granule expansion [3]. This highly limits subsequent starch hydrolysis to fermentable sugars [4] & hydrolysis of proteins into FAN [5].

- Sorghum lines that express waxy and HD traits have been developed by Texas A&M University showed promising potentials for brewing [6]. However, optimization and pre-scale-up of the lines has not been studied. Thus, the aim of this study was to optimize malted adjunct sorghums for brewing potentials of local and improved sorghum genotypes.

EXPERIMENTAL

Sorghum lines (Backup sorghum) → Steeping (25°C, 24 h) → Drying (50°C, 24 h) → Germination (25°C, 72 h) → ANALYSES

RESULTS & DISCUSSION

a) Grain Quality – composition & adjunct potential (Fig 1. Quality variations)

b) Grain Quality – endosperm texture vs waxy-HD sorghums

- Malted Melkam & ESH-1 had high HWE (malted adjunct quality) (Fig 3).
- In case of limited production in waxy sorghums, these local improved sorghums (malted) could be used to partially replace barley malt in brewing.

CONCLUSION

The study reveals that Macia and Melkam are suitable for adjuncts being higher in HWE. ESH-1 and Melkam could be considered for malting with comparable desirability to that of waxy and HD lines. Generally, this study shows that the malting and adjunct quality characteristics checked in this experiment seemed to exhibit comparable results. These sorghums (malted or unmalted) have a potential to be used for brewing process – partly replacing barley malt or other adjunct.