

# Opportunities for Practice Change in Climate Change Adaptation in Smallholder Dairy Farmers in Nandi County, Kenya

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Increase in population is driving increase in agricultural production and this is majorly experienced with smallholder farmers who are always engaging in diverse agricultural practices. This paper analyses smallholder dairy farmers farm utilization and relates this utilisation to constraints affecting smallholder dairy farmers capacity to improve manure management. Improved manure management would be useful for nutrient retention and minimizing GHG emissions. The study aims (i) To enumerate the different farm utilization by small holder dairy farmers; (ii) to analyze the different sources and utilization of manure by the smallholder dairy farmers and (iii) highlight the gaps that offer opportunities for climate change adaptation by the smallholder dairy farmers. Through use of farm survey using Open Data Kit and meta-analysis of the relationships in the variables, the farmers are characterized by; gender, age, education level, total available household labour, grazing acreage, total acreage, total number of dairy livestock available in the household, main income category of the household and number of manure management systems in the household. The study showed crop farmers who were males in Lower Highland 1 (LH1) Agro-ecological Zones had large 'household area' ( $1.3\pm 0.41$  acres) and the largest acreage for cash crop ( $5.9\pm 1.49$  acres). In terms of acreage available for grazing LH1 males with income from 'Other' sources had largest acreage ( $5.6\pm 4.88$  acres). Upper Midlands males with dairy income had the largest ( $16.6\pm 16.34$  acres) acreage for trees as well as the largest total farm acreage ( $26.1\pm 18.53$  acres). Male farmers in LH1 and LH2 had more acreage available for agricultural use while female crop farmers in Upper Midlands (UM) had more acreage available for agricultural use. The paper offers a characterization of farm uses that would be useful for policy makers in designing climate adaptation programs as well as opportunities for further research.

**Key Words:** Climate Change Adaptation, Smallholder dairy farmers, Sub-saharan Africa, Opportunities for practice change