Factors Influencing Adoption of Cattle Excreta Management Practices for Improved Elephant Grass (*Pennisetum purpureum*) Production by Smallholder Dairy Farmers

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Introduction Livestock in East Africa have been reported to play a valuable role in sustainable agricultural systems (Bebe , 2003 ; Winrock International , 1992) where together with crops they make sustainable natural resource use possible (Lekasi et al . , 2001) . Haque et al . (1995) reported that animal excreta plays an important role in maintaining cropland productivity in Sub-Saharan Africa , and most smallholder farmers in Uganda will continue to rely on the exploitation of this natural resource for maintaining soil fertility . With the ever increasing human population and escalating demand for foods of animal origin , sustainable elephant grass production is of paramount importance among smallholder zero-grazing (intensive dairy) farmers in peri-urban areas of Uganda . However , in Uganda , elephant grass is becoming less productive both in dry matter (DM) yield and nutritive quality with successive harvesting . The decline in quality and quantity of elephant grass has been attributed to failure by the farmers to adopt sustainable livestock production practices (Katuromunda et al . , 2001) . Therefore , the objective of this study was to assess factors that influence adoption of cattle excreta management practices for improved elephant grass production among the intensive dairy farmers .

Materials and methods A diagnostic survey and participatory on-farm trials were conducted among intensive dairy farmers to examine factors that influence adoption of cattle excreta management practices . Management practices of burying cattle excreta in trenches , topical application and no applied excreta were compared . Influence of excreta management practices on quality and quantity of elephant grass were studied .

Results and discussion Although 98% of the sampled households were 5-7 people or more , 72% practiced zero-grazing on 2 acres or less . Therefore , 55% of the farmers kept only 2 crossbred dairy cows producing limited excreta for farm use , and 78% of the farmers produced less than 10 litres of milk from each cow . Burying cattle excreta resulted in higher ($P<0.05$) dry matter (DM) yields of 22 .4 t ha^{-1} of elephant grass leaves compared to 15 .1 t ha^{-1} and 10 .5 t ha^{-1} from topical excreta application and control treatments , respectively . Although crude protein (CP g kg^{-1}) did not vary ($P>0.05$) with the different cattle excreta management practices , DM yield of elephant grass , its leaf :stem ratio and ash were superior ($P<0.05$) with treatments where the excreta was buried . While burying excreta improved quality and quantity of elephant grass , yields varied from farm to farm depending on the level of adoption of cattle excreta management practice . High cost , unfair division of labour among gender and lack of basic equipment such as spades and wheelbarrows to carry the excreta to elephant grass gardens affected the adoption of cattle excreta management practices . The major cost of production among zero-grazing farmers was feed , which accounted for 46 .8% of total cost , followed by labour , veterinary services and equipment . It is concluded that high costs and unfair division of labour between gender as well as lack of basic equipment to transport excreta influenced the adoption of cattle excreta use by zero-grazing farmers .

Conclusion These results indicated that interventions aimed at improving elephant grass production by smallholder dairy farmers can only be successful if basic equipment that enhance recycling the excreta and gender roles to reduce the drudgery of labour are addressed .

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