# Animal husbandary practices of smallholder organic farmers in Uganda: Challenges and future prospects

SYLVIA NALUBWAMA[1],MUHAMMAD KIGGUNDU[2], METTE VAARST[3]

**Key words:** Animal husbandry, practices, organic, smallholder, Uganda

## Abstract

*Organic agriculture development in Uganda has been mainly in crop production. Currently certified organic livestock production is non-existent. However, some of the existing animal husbandry practices of smallholder organic farmers are similar to those recommended in organic animal husbandry. A survey to understand these practices and challenges was conducted among ninety certified organic pineapple farmers in two districts using a semi-structured questionnaire. Results indicated that organic farmers kept a diversity of livestock species. Most organic farm (81%) had cattle. Other species owned were goats, pigs and chicken. Farmers mainly kept indigenous livestock breeds and majority (90%) used natural mating as a form of animal breeding. Farmers in Luwero district kept a significantly higher (P< 0.001) number of cattle (mean 2.3) than in Kayunga district (mean 1.6). Sixty four percent of farmers had no housing for their livestock. Natural pastures and crop residues formed bulk of feed for ruminants and pigs. Tethering was the commonest form of management system in ruminants (90%). Pigs (60%) and chicken (95%) were under free range system. There was a significant relationship (P= 0.047) between breed of cattle and grazing system. Major challenges of livestock production were inadequate feeds, pests and diseases. Selection of tolerant breeds and use of herbal concoctions were the adopted coping strategies. Majority of farmers (100%) resorted to use of synthetic chemical drugs in case of failure of these strategies. The future development of organic animal husbandry among smallholder organic farmers lies in developing sustainable research based technologies/ solutions to tackle existing and future challenges, investing in infrastructural development as well as improving farmer's knowledge.*

## Introduction

Uganda has 188,625 certified organic farmers, the highest in Africa following India with 400,551 certified producers globally ((Willer and Kilcher, 2012). Organic agriculture development has been mainly in organic crop production. Currently organic livestock production is non-existent as a result of fewer efforts towards its development. Uganda's agricultural sector is dominated by smallholder mixed crop-livestock farmers. The smallholder livestock farmers face numerous challenges mainly endemic diseases and inadequate animal feeds ((Nalubwama et al., 2011; Vaarst et al., 2006). These are more amplified in organic systems where use of chemical drugs and feed additives is prohibited. Livestock is an integral part of many organic farms due to its role in nutrient recycling. Promotion of integration of livestock into organic crop production not only creates opportunity for farmers to benefit from synergies of mixed crop-livestock systems, environmental protection but also an opportunity for production of organic animal products for niche organic markets. Currently there is scarcity of documented information on existing animal husbandry practices, challenges and opportunities among smallholder organic farmers to understand future development prospects. This paper aims at discussing the above based on a survey conducted among mixed smallholder certified organic pineapple farmers in Uganda.

## Material and methods

A cross sectional study was conducted in Kayunga and Luwero districts of Uganda. Study sites and population were purposively selected to target certified organic pineapple farmers also keeping livestock. Snow-ball sampling was used to select respondents (Marshall, 1996). A pre-tested structured questionnaire (Gill et al., 2008) was used to collect data from 90 respondents. Data was analysed for descriptive statistics using SPSS statistical package (SPSS Inc., Chicago, Illinois, USA). Chi- Square and T- Tests were performed to test for significant differences in distribution of responses. P-values less than 0.05 were considered statistically significant.

[1] Makerere University, School of Veterinary Medicine, Uganda, eMail: drnalubwama@gmail.com
[2] Makerere University, School of Agricultural Sciences, Uganda, eMail: kiggundumuhammad@gmail.com
[3] Aarhus University, Faculty of Agricultural Sciences, Denmark,eMail: mette.vaarst@agrsci.dk

## Results

Results indicated organic farms were diversified to include different livestock species, crops and trees. Livestock species and numbers are presented in Table 1. Majority (81%) of organic farms kept cattle. Cattle herd size was significantly higher (P<0.001) in Luwero than in Kayunga districts. None of the farmers reported managing their livestock according to organic standards. Most of farmers (64%) had no housing for the livestock but rather kept the animals under tree shades. Majority of the farmers had indigenous breeds of cattle (62%), goats (97.8%), pigs (87.5%) and chickens (100%). Over 90% of farmers reported using natural mating as the method of animal breeding.

Natural pastures were the most common feed resource for cattle (100%), goats (100%) and pigs (50%) followed by crop residues. Tethering was the commonest form of management system in ruminants (90%). Pigs (60%) and chicken (95%) were under free range system. There was a significant relationship (P= 0.047) between breed of cattle and grazing system, indigenous breeds (74.4%) were tethered while the crossbreeds (83.3%) were zero grazed.

Major challenges of livestock production in both districts were inadequate feeds (quality and quantity) and livestock pests & diseases. The common pests and diseases reported were internal parasites (helminthes) in cattle (55%), goats (86%) and pigs (75%), tick infestation, tick borne diseases, and new castle in chicken (75%). Selection of tolerant breeds and use of herbal concoctions were some of the adopted coping strategies. All organic farmers (100%) resorted to conventional veterinary drugs in case of failure of these strategies.

**Table 1: Types of species and means of Livestock numbers**

| | Kayunga district | Luwero district | | |
|---|---|---|---|---|
| Livestock Species | Mean | Mean | SEM | P-Value |
| Cattle | 1.6 | 2.3 | 0.4 | <0.001 |
| Goats | 3.3 | 4.6 | 0.79 | 0.103 |
| Pigs | 4.0 | 3.0 | 0.87 | 0.212 |
| Chicken | 12 | 11.6 | 2.05 | 0.916 |

## Discussion

This study showed that organic farms are diversified which might create a basis for a well-balanced system for nutrient recycling, an important concept in organic farming. These results are consistent with other studies (Esilaba et al., 2005; Walaga et al., 2000). Integrating livestock in organic systems not only creates avenues for nutrient recycling but also enables farmers to access niche organic livestock product markets. In addition the diversity in fauna and flora gives opportunity for the use of natural herbs in treatment of some livestock disease conditions as reported by some farmers.

Although the current organic farms have non- organic herds, there are good prospects for future organic animal husbandry considering some of the existing animal husbandry practices which are similar to recommendation by the East African Organic Standards. Organic farmers mainly reared indigenous breeds which are adapted to local tropical conditions. Indigenous breeds are known to have low production, but are more tolerant to tropical climate, endemic diseases and pests unlike exotic breeds. The use of well-adapted breeds is highly recommended in organic production systems as these are usually disease resistant (Magnusson, 2001; Stockdale et al., 2001) hence minimal requirement for use of synthetic veterinary drugs for disease control. Tethering of ruminants on natural pastures and free range management in pigs and chicken observed in the study areas provided animals with free outdoor access which is a requirement in organic farming systems. Such systems also predispose animals to parasites especially ticks and helminthes which might comprise the animals' health status. However, the development of disease might depend on the animal's nutritional status which pays a big role in its immunity.

Although organic animal feeds are not currently a requirement in the study area pending conversion to organic livestock production, inadequate feed is generally still a constraint for livestock production. The dependence on natural pastures with limited avenues of supplementation which characterizes most smallholder organic farms has consequences. The availability of natural pastures is depends on availability of rainfall, therefore during dry seasons there is always drastic scarcity of this resource. Secondly nitrogen (N) is a limiting nutrient in many tropical pastures (Bogale et al., 2008). This may compromise the health and welfare of animals which are aspects of importance in organic farming. This might explain why diseases and feed came out as the major challenges in livestock production. Therefore management strategies on how animals can have access to outdoor environment and good feeding without comprising their health and welfare need to be developed.

Although existing animal husbandry practices of organic farmers might indicate good prospects for conversion to organic animal husbandry, farmers play a big role in decision making. Organic farmers in Uganda invest their time and resources in high value crops like organic pineapples and other horticultural products due to the available local and export markets. There is substantial investment required in research, infrastructural development as well as improving farmer's knowledge in organic animal husbandry which government and private sector will need to consider supporting farmer's efforts.

## Suggestions to tackle with the future challenges of organic animal husbandry

Future challenges of organic husbandry in Uganda lie in the increasing human population which is bound to increase pressure on land for production. Inevitably this might lead to changes in existing production systems to more intensified production. Currently ruminant production is based on poor natural pastures while the non- ruminants require cereal based proteins which are competed for with humans. In conventional systems, supplementation with synthetic feed additives is the strategy adopted to address the nutrient shortages; however these are not acceptable in organic systems. Secondly, the animal pests and diseases that are still majorly managed using synthetic veterinary drugs even in the existing organic farms is another challenge. Therefore development of innovative strategies/ technologies in animal nutrition and disease control under organic farming systems as well as development of local and regional consumer markets for organic animal products will assist in tackling future challenges of organic animal husbandry.

## References

Bogale, S., Melaku, S., and Yami, A. (2008). Matching livestock systems with available feed resources in the Bale highlands of Ethiopia. *Outlook Agric* **37**, 105–110.

Esilaba, A. O., Nyenda, P., Nalukenge, G., Byalebeke, J. B., Delve, R. J., and Ssali, H. (2005). Resource flows and nutrient balances for crop and anaimal production in smallholder farming systems in Eastern Uganda. *Agriculture, Ecosystems and Environment* **109**, 192-201.

Gill, P., Stewart, K., Treasure, E., and Chadwick, B. (2008). Methods of data collection in qualitative research: interviews and focus groups. *Br Dent J* **204**, 291-5.

Magnusson, U. (2001). Breeding for disease resistance in organic farming- possibilities and constraints. *Acta Veterinaria Scandinavica, Supplementum* **95**, 59-61.

Marshall, M. (1996). Sampling for qualitative research *Family practice* **13**, 522-5.

Nalubwama, S. M., Mugisha, A., and Vaarst, M. (2011). Organic livestock production in Uganda: potentials, challenges and prospects. *Tropical Animal Health and Production* **4**, 749.

Stockdale, E. A., Lampkin, N. H., Hovi, M., Keatinge, R., Lennartsson, E. K. M., Macdonald, D. W., Padel, S., Tattersall, F. H., S, W. M., and A., W. C. (2001). Agronomic and Environmental implications of organic farming systems. Advances in Agronomy. *Advances in Agronomy* **70**, 261-325.

Vaarst, M., Roderick, S., Byarugaba, D. K., KobayashI, S., C., R.-A., and Karreman, H. J. (2006). Sustainable veterinary medical practices in organic farming: A global perspective. *In* "Global Development of Organic Agriculture, Challenges and Prospects" (N. Halberg, H. F. Alrøe, M. T. Knudsen and E. S. Kristensen, eds.), pp. 241-276. CABI Publishing.

Walaga, c., Egulu, B., Bekunda, M., and Ebanyat, P. (2000). Impact of policy change on soil fertility management in Uganda. *In* "Nutrients on the Move. Soil fertility dynamnics in African farming systems" (T. Hilhorst and F. Muchena, eds.), pp. 29-44.

Willer, H., and Kilcher, L., eds. (2012). "The World of Organic Agriculture- Statistics and Emerging Trends 2012." Research Institute of Organic Agriculture (FiBL), Frick and International Federation of Organic Agriculture Movements (IFOAM), Bonn