ANIMAL HUSBANDARY PRACTICES OF SMALLHOLDER ORGANIC FARMERS IN UGANDA: CHALLENGES AND FUTURE PROSPECTS

Sylvia Nalubwama[1], Mette Vaarst[2], Kabi Fred[3], Muhammad Kiggundu[3],

[1] *Makerere University, School of Veterinary Medicine, P.O.Box 7062, K'la*
[2]*Aarhus University, Faculty of Agricultural Sciences, P.O. Box 50, DK-8830 Tjele,*
[3]*Makerere University, School of Agricultural Sciences, P.O.Box 7062, K'la*

[1]*Leading author: +256-782-552-706, drnalubwama[a]gmail.com*

Introduction

Uganda has 188,625 certified organic producers, the highest in Africa following India with 400,551 certified producers globally (Willer *et al.*, 2012). In addition 85% of farmers in Uganda practice 'defacto' organic agriculture based on traditional practices featuring non-use of chemical pesticides and fertilizers. Substantial attraction to organic farming in the recent past has been due to opportunity for exportation of organic products especially horticultural products to Europe which was created by initiatives like EPOPA (Agro Eco and Grolink 2008). Organic agriculture development has been mainly in organic crop production mainly targeting export opportunities. Currently organic livestock production is non-existent as a result of fewer efforts towards its development. The largest proportion of agricultural production in Uganda is mixed and indeed livestock has been reported to be an integral part of many organic farms elsewhere due to its role in nutrient recycling. But smallholder farmers also face challenges of livestock production mainly feeds and endemic diseases (Nalubwama *et al.*, 2011; *Vaarst et al.*, 2006). These are more amplified in organic systems were use of chemical drugs and feed additives is prohibit yet limited alternatives. Promotion of integration of livestock in organic farming systems not only creates opportunity for farmers to benefit from synergies of mixed crop-livestock systems but also an opportunity for development of organic livestock production targeting niche organic animal products markets locally and regionally. However, there is scarcity of information on animal husbandry practices, opportunities and challenges among mixed smallholder organic producers in Uganda so as to understand future prospects for development of mixed crop-livestock organic systems. This paper aims at discussing the above based on a survey conducted among mixed smallholder certified organic pineapple farmers in Luwero and Kayunga districts.

Materials and methods

A population of certified organic pineapple producers was selected from 2 districts of Luwero and Kayunga in Uganda. Using snowballing sampling technique 90 organic farmers selected for interview. Data collected through semi-structured interviews was analysed using SPSS for descriptive statistics. Chi- Square and T- Tests were used to test for difference distribution of responses. P-values less than 0.05 were considered statistically significant.

Results and discussion

In rural areas of Uganda, Agriculture is majorly of mixed systems based on traditional practices. It involves minimum use of external inputs like chemical fertilizers, pesticides and drugs. Although this may be perceived as organic agriculture because of low input use it would rather be referred to as 'organic by default' for not being fully in accordance with organic agriculture principles (Nalubwama *et al.,* 2011). Such systems where livestock is essentially integrated with organic crop production however make good prospects for organic livestock production. Hence, documentation of the existing animal husbandry practices to understand the status of livestock farming among organic farmers.

Diversity of livestock species maintained by organic farmers

Majority of the organic farms surveyed kept more than one type of livestock with majority (81.1%) having cattle in combination with other species (goats, pigs and chickens). There was no significant difference (P>0.05) in the numbers of pigs, chickens and goats owned per farm in the two districts, however there was significant difference (P=0.017) in number of cattle owned as indicated in table 1. Mixed systems are not uncommon in tropical countries (Von Kaufmann, 1999; Herrero *et al.*, 2009a). Farm diversification to include livestock can be a basis of a well balanced system, allowing integration for nutrient recycling and effecitve resource use as indicated by various studies (Walaga *et al.*, 2000; Esilaba *et al.*, 2005) pertaining nutrient management in Uganda.

Table 1: Livestock species and numbers

	Kayunga (n=37)			Luwero (n=53)			
	Mean	**SD**	**SEM**	**Mean**	**SD**	**SEM**	**P-value**
a) Cows	2.0	1.35	0.25	3.0	2.0	0.32	0.017*
b) Goats	3.4	1.5	0.34	4.6	3.0	0.64	0.123
c) Pigs	3.7	2.5	0.63	3.2	2.7	0.71	0.590
d) Chickens	11.6	7.3	1.89	12.1	6.3	1.04	0.895

* Significant at P < 0.05

Animal husbandry practices of organic farmers

Breeds and Breeding

The use of well-adopted breeds is one of the major characteristics given much emphasis in organic production systems and that disease prevention in organic livestock production is preferably based on this (Stockdale *et al.*, 2001; Kijlstra and Eijck, 2006). 62% of the farmers had indigenous breeds of cattle, 97.8% had goats, 87.5% had pigs and 100% of farmers had indigenous chickens. Natural mating was reported as the most common method of breeding in all animal species.

Feeds and Feeding systems

Most organic farmers were fed crop residues to cattle (63.2%) and pigs (46%). While they mostly fed natural pastures to goats (39.8%) and lesser extent to cattle (21.1%) and pigs (17.7%). Chickens were left to scavenge. Other feeds included improved pastures e.g. Napier grass and agro industrial by products. Livestock being indigenous and local breeds thriving well on locally produced feeds might be the reason for less dependency on external inputs. Grazing through tethering was the most common cattle, goats and pigs. Such less intensive management system gave animals' outdoor access that is recommendable in organic systems. However, it also increases the risk of animals coming in contact with a broad range of environment pathogen especially helminthes (Kijlstra and Eijck, 2006). There was a significant relationship (P= 0.047) between breed of cattle and feeding system. Majority of indigenous breeds (74.4%) were tethered while crossbreeds (83.3%) fed under zero grazing system.

Livestock diseases and their control

Majority of farmers reported internal parasites (helminthes) in goats (100%), pigs (55.6%) and cattle (32.1%) as major animal health problem. High prevalence of helminthes under organic/free range systems has already been documented (Permin *et al.*, 1999; Lindqvist *et al.*, 2001; Carstensen *et al.*, 2002). Others included tick-borne diseases and Newcastle in chickens. Farmers used coping strategies like preventive measures and use of herbal concoctions. All organic farmers (100%) resorted to conventional veterinary drug in case of failure. Management in organic system should be based on correct understanding of animal behavior, where preventive health care is vital (Alroe *et al.*, 2001). Short of this, alternatives suitable for the local conditions and compatible with requirements for organic systems need to be devised in disease outbreak. Use of Veterinary drugs is restricted in organic systems according to East African organic standards. A number of measures have been suggested elsewhere to control parasites including biological control, lower stocking rates or alternate grazing (Thamsborg, 2001).

Challenges of livestock production

Major challenges reported were inadequate feeds in quality and quantities and diseases across all species. Others were land shortages and high cost of bought feeds. Farmer's traditional knowledge and practices of adopting indigenous breeds with low level of production, use of crop residues and herbal concoctions were the coping strategies adopted. Other challenges included limited land, expensive labor and inadequate markets.

The Lack of feeds and endemic diseases present implications for future development of organic livestock production. Farmer's reliance on natural pastures and crop residues which have season and quality variability implies that there is need for research in alternative feed resources. Most farmers were unaware of the adequate measures and efficacy of herbal concoctions thus the need for validation. In addition there is need for development of more innovations appropriate for organic systems.

Conclusion and future perspectives

Organic farmers in Uganda keep a variety of livestock species mixed with organic crop production. They mostly rear indigenous breeds well adapted to the local environment. Ruminants and pigs are mostly tethered on natural pastures and supplemented with crop

residues. Major livestock production challenges in organic systems are insufficient feeds and diseases mainly helminthes and tick-borne diseases.

Organic livestock farming may be non-existent in Uganda today; however, some animal husbandry practices like use of indigenous breeds, outdoor grazing and use of preventive and herbal remedies are similar to some of the recommendations by the East African Organic Standards. This makes prospects for conversion to organic livestock farming more feasible in existing organic systems than conventional systems.

Farmers have a role to play since decision making solely rests on him. Organic farmers invest their time and resources in high value organic crop produces like pineapples due to the available market. There is substantial investment required in infrastructural development, improving farmer's knowledge and provision of appropriate inputs which government and private sector will need to consider supplementing farmer's efforts. Focus will then be developed for organic livestock production for producing quality animal products for the organic markets and household nutrition. In addition, livestock as synergy to organic crop production.

References

1. AgroECO, B.V., Grolink, A.B., 2008. Organic Exports – A way to a Better Life? . p. 104.
2. Alroe, H.F., Vaarst, M. and Kristensen, E.S. (2001): *Journal of Agricultural and Environmental Ethics* (14): 275-299.
3. Carstensen, L., Vaarst, M., Roepstorff, 2002. Helminth infection in Danish Organic Swine Herds. Veterinary Parasitology 106, 253-264.
4. Esilaba, A.O., Nyenda, P., Nalukenge, G., Byalebeke, J.B., Delve, R.J., 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.
5. Kijlstra, A., Eijck, I.A.J.M., 2006. Animal Health in organic livestock production systems: a review. Journal of Animal Science 54.
6. Nalubwama, S.M., Mugisha, A., Vaarst, M., 2011. Organic livestock production in Uganda: potentials, challenges and prospects. Tropical Animal Health and Production 4, 749.
7. Permin, A., Bisgaard, M., Frandsen, F., Pearman, M., Kold, J., Nansen, P., 1999. Prevalence of gastrointestinal helminths in different poulty production systems. British Poultry Science 40, 439-443.
8. Prichard, R., Menez, C., Lespine, A., 2012. Moxidectin and Avermectins: Consanguinity but not identity. Int. J. Parasitol Drug Resist 2, 134-153.
9. Thamsborg, S., M, 2001. Organic farming in the Nordic countries- animal health and production. Acta veterinaria Scandinavica, Supplementum 95, 51-57.
10. Vaarst, M., Roderick, S., Byarugaba, D.K., KobayashI, S., C., R.-A., Karreman, H.J., 2006. Sustainable veterinary medical practices in organic farming: A global perspective. In: Halberg, N., Alrøe, H.F., Knudsen, M.T., Kristensen, E.S. (Eds.), Global Development of Organic Agriculture, Challenges and Prospects. CABI Publishing, pp. 241-276.
11. Walaga, c., Egulu, B., Bekunda, M., Ebanyat, P., 2000. Impact of policy change on soil fertility management in Uganda. In: Hilhorst, T., Muchena, F. (Eds.), Nutrients on the Move. Soil fertility dynamnics in African farming systems, pp. 29-44.
12. Willer, Helga and Kilcher, Lukas (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