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# Ethnoveterinary medicines for cattle (*Bos indicus*) in Bulamogi county, Uganda: plant species and mode of use

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Livestock rearing is a key economic activity of Uganda and contributes 7.3% of the Gross Domestic Product ([World Bank, 1993, NEMA, 1998 and MAAIF and MFPED, 2000]). Of all the livestock that are raised in Uganda, cattle are the most important in terms of economic value ( [World Bank, 1993]). The size of the cattle herd in Uganda is estimated to be growing ( [NEMA, 1998]), but diseases seriously hamper production from cattle. Epidemic diseases such as rinderpest, and endemic ones like foot and mouth and tick borne diseases normally afflict cattle in Uganda. The clinical service of the public veterinary service is believed to be inefficient and seen to have minimal effect on animal health ( [World Bank, 1993]).
In many developing countries, farmers and herders rely on ethnoveterinary medicine (EVM) to treat their livestock because the western-based veterinary healthcare system is inefficient due to poor staffing or because western veterinary drugs are expensive ([McCorkle et al., 1996]). EVM is a system of maintaining animal health and curing diseases of animals that is based on folk beliefs and traditional knowledge (TK), skills, methods and practices ( [Mathias-Mundy and McCorkle, 1989]).
Ethnoveterinary medicine knowledge like all other TK systems is transmitted orally from generation to generation (e.g. [McCorkle, 1986, Mathias-Mundy and McCorkle, 1989, McCorkle et al., 1996, Dold and Cocks, 2001 and Ngoroi et al., 2001]), and like the other TK systems, it is disappearing because of rapid socio-economic, environmental and technological changes. This means therefore, that local knowledge of ethnoveterinary healing must be documented and conserved through systematic studies before it is lost forever. To date there has been no systematic recording of veterinary cures in Uganda. Systematic studies on EVM in Uganda are justified for three important reasons, they can: (i) generate concise information which can be used to develop livestock healing practices and methods that are locally suited to Uganda, (ii) if developed systematically EVM can be a key veterinary resource, and (iii) can also add useful new drugs to the modern veterinary pharmacopoeia (see [McCorkle, 1986 and Dhillion et al., 2002]). The main objective of this study was to document the plants used to treat cattle in Bulamogi county.

## 1.1. Study area and the people

Bulamogi county is found in Kamuli district of Uganda between 33°20′–33°38′E and 0°58′–1°18′N at an altitude of 1052–1098 m ([Uganda Government, 1963]). It covers an area of ca. 870 km$^2$. Within Bulamogi county are five subcounties, viz. Nawaikoke, Gadumire, Namwiwa, Bumanya and Namugongo. Within each subcounty are several parishes, each made up of a number of villages.
Bulamogi has four major land use categories: non-uniform small-scale farmland (67.4%), wetlands (16.4%) dominated by *Cyperus papyrus*, woodlands (3.6%) dominated by *Albizia zygia–Combretum* spp.*–Hyparrhenia rufa* association, and *Albizia zygia–Combretum gueinzii–Brachiaria decumbens* association, grasslands (2.6%) dominated by *Sorghastrum rigidifolium*. All other categories including bushlands take up less than 1% of the land area, and the remainder of the area is open water ([Langdale-Brown, 1959 and Forest Department, 1997]).
The people of Bulamogi are an agricultural community who practise subsistence crop agriculture as their main livelihood ([Anonymous, 2000]). Livestock husbandry is very important in the community, and traditionally wealth has been assessed basing on the number of livestock, especially cattle, owned by an individual. Indeed tax assessment is still based on the number of domestic animals owned, although cash crops are increasingly forming the basis for tax assessment. More than 95% of the community rear livestock, and the cattle herd is estimated at 75,000 animals ( [Tabuti et al., in preparation]). The cattle herd of Bulamogi comprises of indigenous short horned Zebu (*Bos indicus*). There are five western veterinary trained doctors, one in each subcounty.

# 2. Methods

Fieldwork for this study was carried out between June 2000 and June 2001. We used semi-structured interviews, questionnaires, and direct observations to collect the data ([Martin, 1995]). Prior to any contact with the local people, the study and its objectives were introduced to the County Officer—this introduction was always repeated when entering a new administrative area (e.g. a subcounty or a village).
Five key informants were interviewed using a semi-structured interview schedule consisting of a checklist of questions. Household respondents were chosen through stratified sampling. In each subcounty, a respondent was randomly chosen from at least one village from each parish in the subcounty. In this way, 126 household respondents were interviewed. We administered a questionnaire consisting of a mixture of open- and close-ended questions in face-to-face interviews. Some of the farmers were reluctant to show us their local methods of treating

cattle. The questions asked focused on determining: (i) which cattle diseases are known in the community and (ii) how these diseases are treated. Interviews were conducted in the local language, the *Ki-lamogi*. The interviews were supplemented by direct observations. Plant voucher specimens were collected and are deposited at the Makerere University Herbarium.

Data from the field study were reviewed and all incomplete responses were excluded. This left 100 valid respondents. The data were then analysed both qualitatively and quantitatively; responses from open-ended questions were grouped into classes that expressed similar ideas while percentages, based on valid responses only, were calculated from close-ended questions.

# 3. Results and discussion

## 3.1. Plant species used to treat cattle

Thirty-eight plant species distributed in 37 genera and 28 families are used to treat cattle. Two species were unidentified (Table 1). Most of these plant families are dicotyledonous except Anthericaceae, Araceae, Asparagaceae, Bromeliaceae, and Musaceae. The families with the largest number of plant species used to treat cattle are Fabaceae with five species and Euphorbiaceae with three. The families Rubiaceae, Rutaceae, and Solanaceae are represented by two species each. The rest of the plant families have one species each. The two families Fabaceae and Euphorbiaceae have the highest diversity of species used to treat cattle diseases probably because they contain relatively more species than other plant families in the area.

Table 1. Plant species used to treat cattle, their habit, status, disease treated, plant parts used, and mode of preparation and administration

| | | | | |
|---|---|---|---|---|
| NV | Clorophytum comosum Thumb.) Jacq.** | nalwebe | V(002), | barks infusion + salt |
| 11940 | Steganotaenia araliacea** | kibundubundu | east coast fever calf (*Theileriosis*) | Roots, infusion, VO. 500 ml, 2 X / Day |
| NV | Aristolochia elegans Mast. Aristolochiaceae | mukumya, masanda | east coast fever (*Theileriosis*) | leaves, infusion, VO. |
| 01450 | Asparagus racemosus Willd.** | mukila gwango | east coast fever (*Theileriosis*) | roots infusion , 15 l. + salt |
| 01600 | Balanites aegyptiaca (L.) Del.** | mulugunyu | Abdominal pain | roots infusion |
| 01170 | Ananas comosus (L.) Merr.** | nanansi | east coast fever (*Theileriosis*) | leaves, infusion, VO. |
| 08500 | Maytenus senegalensis** | muwaiswa | east coast fever (*Theileriosis*) | roots infusion, 125 ml 2 X / day for calf |
| 05830 | Euphorbia tirucalli** | mukone | east coast fever (*Theileriosis*) | aerian part burn swollen area, sap on the burned zone |
| NV | Sinadenium grantii Hook. F.** | nandele | east coast fever (*Theileriosis*) | aerian part, sap is smeared at the swollen part |
| 00010 | Abrus precatorius** | | cataract | seeds, RNS. |
| 12340 | Tephrosia vogelii ** | muluku | -skin desease<br>-wound | leaves, rubbed on skin<br>leaves, sap applied on wounds specialy when infested with maggots |
| 12400 | Tetradenia riparia** | kiyongobela | east coast fever (*Theileriosis*) | leaves, infusion, VO. for calf |
| 01570 | Azadirachta indica ** | neem | Skin desease | leaves, RNS. |
| 08920 | Musa paradisiaca var paradisiaca ** | matooke, bigogo | - east coast fever (*Theileriosis*)<br>-measles | beer from fruit, VO., warm<br>infusion from leaves + salt and potash |
| NV | Boerhavia diffusa L. Nyctaginaceae** | jojokelo | east coast fever (*Theileriosis*) | parts above the ground, infusion, VO. |
| NV | Sarcocephalus latifolius (Smith) Bruce** | mutamatama | diarrhoea | roots, infusion, 500 ml to calf in once a day |
| 10000 | Physalis peruviana L.** | ntuntunwe | east coast fever (*Theileriosis*) | leaves + milk of the mother cow |
| 11650 | Solanum incanum** | ntonka | cataract | fruit, sap mixed with powder from burnt snail shell, local application - - - sap + salt in eyes - - - sap mixed with cassava flour, local application |
| NV | Strychnos innocua Del.** | muhondo | east coast fever (*Theileriosis*) | roots, infusion, 300-500 ml., VO. |
| 03340 | Clerodendrum myricoides** | mukuza nyana | east coast fever (*Theileriosis*) | leaves, infusion, RNS. |
| 025 | Carissa edulis** | mutwoga | east coast fever | - roots mixed in warm |

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| 35 | | | (*Theileriosis*) | banana beer, VO. to calf -roots of Carissa edulis, Acacia seyal, infusion, VO. |
| NV | Pistia stratiotes L. (Araceae) | pompo | east coast fever (*Theileriosis*) | whole plant + roots Oncoba spinosa, infusion |
| 12800 | Vernonia amygdalina ** | lubilili | cough,<br><br>diarrhoea,<br><br>measles | leaves of Vernonia amygdalina, Chenopodium opulifolium, Senna occidentalis, infusion, VO.<br><br>roots see Senna occidentalis and also Harrisonia abyssinica<br><br>leaves, infusion see also Chenopodium opulifolium |
| 01600 | Balanites aegyptiaca** | mulugunyu | east coast fever (*Theileriosis*)<br><br>measles | roots, infusion from Balanites aegyptiaca, Jatropha curcas, Gardenia ternifolia, VO. 500 ml once a day<br><br>roots, infusion from Balanites aegyptiaca + leaves of Chenopodium opulifolium and Cannabis sativa + salt, VO., 20l. in 4 days |
| 02310 | Cannabis sativa** | njaye | east coast fever (*Theileriosis*)<br><br>measles | leaves decoction - - - leaves infusion + roots Securidaca longipedunculata, VO. 125 ml / day<br><br>leaves see Chenopodium opu<br>Balanites aeg.<br>Lantana camara |
| 02930 | Chenopodium opulifolium ** | namuvu | measles,**<br><br>cough,** | leaves infusion + salt, VO. 500 ml / day during 7 days - - - leaves of Chenopodium opulifolium, Cannabis sativa, Vernonia amygdalina + salt + powder soap of OMO, infusion, VO<br>See also Balanites aeg.<br>Lantana camara<br><br>leaves of Vernonia amygdalina, Chenopodium opulifolium, Senna |

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| | | | diarrhoea | occidentalis, infusion, VO.<br><br>leaves see Senna occidentalis |
| 074 90 | Jatropha curcas** | kilowa | east coast fever (*Theileriosis*) | Roots see Balanites aeg |
| 026 40 | Senna occidentalis ** | kasagalyansasi | diarrhoea<br><br>cough | leaves see Vernonia amygdal<br><br>leaves see Vernonia amy |
| 001 70 | Acacia seyal var fistula ** | mufuwanduzi | east coast fever (*Theileriosis*) | roots see Carissa edulis |
| 007 80 | Albizia coriaria Oliv. (Mimosoideae) ** | musita | east coast fever (*Theileriosis*) | roots, decoction, infusion 2 X / day - - - roots, decoction, + concentrated milk - - - infusion of roots of Albizia coriaria, Oncoba spinosa - - - infusion of roots of Albizia coriaria, Milicia excelsa, Securidaca longipedunculata, VO. To calf, 500 ml.: day - - - infusion of roots of Albizia coriaria,, Clerodendrum myricoides, VO. In 1 day in the morning |
| NV | Oncoba spinosa Forsk. (Flacourtiaceae)** | mubeye | east coast fever (*Theileriosis*) | Roots, fruits, infusion, RNS. - - - dried fruit tied around neck of calf to act as prophylactic - - - see Pistia stratiotes and Albizia coriaria |
| NV | Milicia excelsa (Welw.) C.Berg (Moraceae)** | mvule | east coast fever (*Theileriosis*) | Infusion made from young leaves with swelling + salt - - - see Albizia coriaria |
| 112 90 | Securidaca longipedunculata** | mukondwa | east coast fever (*Theileriosis*) | roots from fresh roots or pre-prepared powder + salt, VO. for calf +/- 1 l. - - - see Albizia coriaria, Cannabis sativa |
| 093 60 | Oxygonum sinuatum (Meisn.) Dammer (Polygonaceae) | nkenge | east coast fever (*Theileriosis*) | part above the ground, see Harrisonia abyssinica |
| 061 20 | Gardenia ternifolia** | lukoole | east coast fever (*Theileriosis*) | Roots see Balanites aegytiaca |
| 032 20 | Citrus limon** | niimu | east coast fever (*Theileriosis*) | leaves mixed with other Citrus sp, décoctio, VO. as prophylactic |

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|---|---|---|---|---|
| NV | Citrus sp. | buniimu | east coast fever (*Theileriosis*) | leaves mixed with other Citrus sp, décoctio, VO. as prophylactic |
| 065 60 | Harinsonia abyssinica** | lushaike | east coast fever (*Theileriosis*)<br><br>diarrhoea | roots, infusion - - - decoction + above ground part of Oxygonum sinuatum, VO. 200 ml, 3 X / day, during 5 days<br><br>roots of Harinsonia abyssinica, Vernonia amygdalina + salt, VO. 20 l. |
| 079 20 | Lantana camara** | kapanga | measles | leaves of Lantana camara, Chenopodium opulifolium, Cannabis sativa, VO., 125 ml. |
| 033 40 | Clerodendrum **myricoides | mukuza nyana | east coast fever (*Theileriosis*) | Leaves infusion - - - see Albiziz coriaria |
| | | | | |

The species *Vernonia amygdalina*, *Balanites aegyptiaca*, *Cannabis sativa*, *Chenopodium opulifolium*, *Senna occidentalis*, *Tephrosia vogelii*, *Musa×paradisiaca* and *Harrisonia abyssinica* are used to treat more than one cattle ailment. All plant species used as veterinary medicine except *Ananas comosus*, *Boerhavia diffusa*, *Musa×paradisiaca* L. var. *paradisiaca* and *Pistia stratiotes*, are also used to treat human diseases (see [Tabuti et al., 2003]). Use of similar plants to cure both animal and human diseases is common practice in traditional medicine (see [Mathias-Mundy and McCorkle, 1989]). Some of the plants inventoried here have other uses in the community; for example, some are used in human medicine, or as food, while others are used as firewood. Generally, efforts aimed at conserving plants can be improved if the species selected for conservation have many different uses, as multiple uses can motivate people to conserve species ( [Aguilar and Condit, 2001 and Etkin, 2002]).
The main attributes of the plants used to treat cattle are that the plants grow wild (76.3%), are indigenous to Africa (68.4%) and are mainly shrubs (60.5%; Fig. 1). The most frequently employed plant parts are roots (37.5%) followed by leaves (27.5%). Fruits are also used to some extent (10.0%). The practice of exploiting perennial plant parts, such as roots of relatively slow growing woody species, can result in a decline in both, the size and distributions of populations of the exploited species, and ultimately result in the local extinction of these populations ([Cunningham, 1993, Sheldon et al., 1997 and Dhillion and Amundsen, 2000]). Presently data on rates and patterns of plant harvesting are lacking for Bulamogi, and we cannot estimate the effect of exploitation on plant population.

## 3.2. Common cattle diseases and conditions

The local people identified 33 different diseases and conditions of cattle (Table 2). Respondents failed to mention some other cattle diseases, viz. Lumpy skin disease, Babesiosis (bloody urine), Orf (contagious exathema), scours (diarrhoea in calves), and Cowdriosis (heart water); and these were instead provided by Dr. Paul Mawadri, the Veterinary Doctor of Gadumire Subcounty. Some of the diseases mentioned by farmers in this study indicated symptoms of diseases. The naming of diseases by local people when compared to the western veterinary medicine system, at times did not distinguish between diseases and symptoms of diseases. This is because local disease nomenclature is based on symptoms of diseases, whereas under western veterinary science, diseases are named according to aetiological information ([McCorkle, 1986, Delehanty, 1996 and Mathias-Mundy and McCorkle, 1989]). As a consequence, several uniquely named animal-health problems may allude to the same disease

when defined by western veterinary science, or conversely, certain local terms may encompass several different diseases. For example, fever the first clinical sign for most diseases; anaemia a symptom of the diseases red water and anaplasmosis; or diarrhoea which is present in trypanosomiasis, rinderpest, anaplasmosis and heart water ( [Pratt and Gwynne, 1977]) are regarded as distinct diseases by the local community of Bulamogi. For this reason the disease conditions provided by the above-mentioned veterinarian, Dr. Mawadri, may have been included under some other all over embracing local disease names.