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Survey on Ethno-Veterinary Practices of Native Chicken Raisers in Davao Region, Philippines

Hyde D. Nadela

Abstract

Nine hundred (900) native chicken raisers were surveyed to verify the extent of ethno-veterinary practices in controlling diseases and parasites in Davao Region. In this survey, the author analyzed the extent of traditional medicine usage vis-à-vis that of modern drugs. Twenty four herbal species, 5 ethno remedies, 7 herbal dewormers, 6 herbal insecticides and one method for eliminating fowl mites were documented. Some herbs have multiple medicinal uses and others vary in their dosage and preparation, thus, the need for standardization and validation. Results also reveal that a significant percentage of raisers neither treat (23%) nor deworm (41%) their flock, an indication that some raisers do not consider native chicken production as an economic enterprise but only as a source of food for the family.

Author information:

Hyde D. Nadela
hyde.nadela@usep.edu.ph
orcid: 0000-0001-7968-1264

College of Agriculture
and Related Sciences
University of Southeastern Philippines,
Tagum-Mabini Campus, Apokon
Mabini, Davao de Oro

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Ethno-medicine is a sub-system of ethno-botany or medical anthropology that deals with the study of traditional medicine. Ethno-veterinary medicine (EVM), a form of ethno-medicine, is a subset of traditional or indigenous knowledge of methods/practices concerned primarily with treating animal diseases and managing livestock. This form of medical treatment utilizes indigenous materials, such as herbs and other medicinal plants, in treating various animal diseases. Herbs possess therapeutic properties for both man and animals. The use of different medicinal plants for treating animal diseases was practiced as early as 1800 B.C. under King Hammurabi of Babylon, who formulated laws on veterinary fees and charged for treating cattle and donkeys (Panda and Dhal, 2014).

Ethno-veterinary medicine is an integral aspect among ethnic groups, providing a generally accessible, available, and cheap source of remedies. Herbal plants are collected from backyards or from forests, and their efficacy is validated through trial and error. For traditional healers, the knowledge and skills obtained on the curative application of various herbs were passed down from generation to generation as a source of living rather than for the purpose of being shared or documented. Through the years, herbs and methods seen as effective were remembered and regularly used, while the ineffective ones were soon dropped and forgotten.

As technology leads to the development of effective, cheaper, and easy-to-use veterinary medicines, ethno-veterinary medicine faces the risk of being forgotten as the former gradually replaces the latter in terms of mainstream animal disease treatment and prevention methods.

However, it has been found that continued use of particular drugs for treating particular diseases leads to the development of resistance among certain pathogens, making them more virulent and difficult to control. Modern medicines may boost production, but are often accompanied by various health and safety issues, making consumers more vigilant and health-conscious, even to the point of going back to using organic products.

Organic agriculture is a significant part of traditional practice in native chicken production. With the latter, birds are allowed to forage with lesser feed input, and are not given any form of vaccination, feed supplements, or antibiotics against diseases, but instead are given medicinal herbs when needed. This opens up the opportunity to explore ethno-veterinary medicine and how it is implemented in raising livestock, particularly for native chicken raisers.

According to Pfeifer and Butz (2005), ethno-botanical knowledge and practices within any culture vary by geographical origin, residence, ethnicity, religion, age, and gender. Thus, an attempt to document ethno-veterinary practices used in native chicken within the Davao Region was conducted. This

study aimed to document traditional practices utilized by farmers in the health care management of native chicken in said region. Specifically, it intended to determine the extent of practice of ethno-veterinary medicine among native chicken raisers, as well as identify and document medicinal plant utilization and other traditional practices by farmers.

Materials and Methods

The study was conducted in eighteen (18) municipalities and districts of Davao Region's five provinces and cities, namely: Davao del Norte (Asuncion, New Corella, San Isidro), Davao de Oro (Maragusan, Pantukan, Maco, Laak), Davao Oriental (Tarragona, Banay-banay), Davao del Sur (Bansalan, Digos City, Sta. Cruz, Magsaysay), Davao Occidental (Sta. Maria, Don Marcelino), and Davao City (Calinan District, Marilog District, Bunawan District) for a period of one year.

Available data on native chicken raisers in the provinces were gathered with the help of the Provincial Agriculture Office (PAO) and the City Veterinary Office of said locations. Data were likewise gathered from the Bureau of Agricultural Statistics. These served as the bases for identifying the municipalities included in the survey.

Within these municipalities, fifty farmers raising at least 50 heads of native chicken were selected for purposive sampling per area. A total of 900 respondents were asked using a structured questionnaire. The data gathered were then consolidated and organized for analysis.

Results and Discussion

Common diseases and symptoms observed

The most common diseases and/or symptoms observed by native chicken raisers are common colds (49.51%), infectious coryza (21.22%), Newcastle disease (19.37%), and fowl pox (5.77%). Minimal incidences of chronic respiratory disease, avian malaria, and pullorum were also observed.

The high incidence of cough and colds may be attributed to stress due to sudden changes in temperature and frequent rain, and is often observed in many respiratory diseases in poultry. Meanwhile, Newcastle disease (*peste*), infectious coryza, fowl pox (*bulutong*), pullorum and chronic respiratory diseases were considered as the most important infectious diseases in Asia along with infectious bursal disease, infectious bronchitis, fowl cholera (*laway-laway*) and aspergillosis (Ideris, 1990). Among them, Newcastle disease was identified

as the main killer and most destructive, incurring the highest economic losses in village chickens in Southeast Asia (Atienza, 1987; Ronohardjo, Wilson, and Hirst, 1985; Husein, 1987; U Than Tint, 1987; Supramaniam, 1988). Although avian malaria was mentioned by the respondents, it is not a prevalent disease in the region.

Most raisers encountered two to three types of diseases affecting native chicken in their farms, as shown in Figure 1.

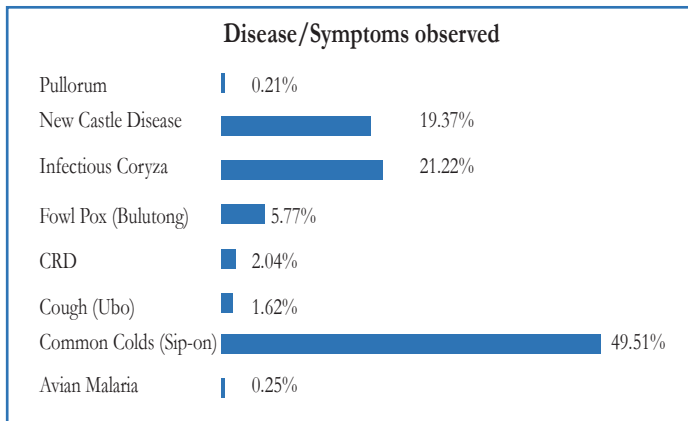


Figure 1. Diseases/symptoms observed in native chicken, Davao Region

Treatments used

Figure 2 shows that most native chicken raisers utilized commercial drugs (38%) and ethno-veterinary medicine (33%) in treating common diseases in poultry, while 6% find the most benefit in combining herbal medicines with commercial drugs.

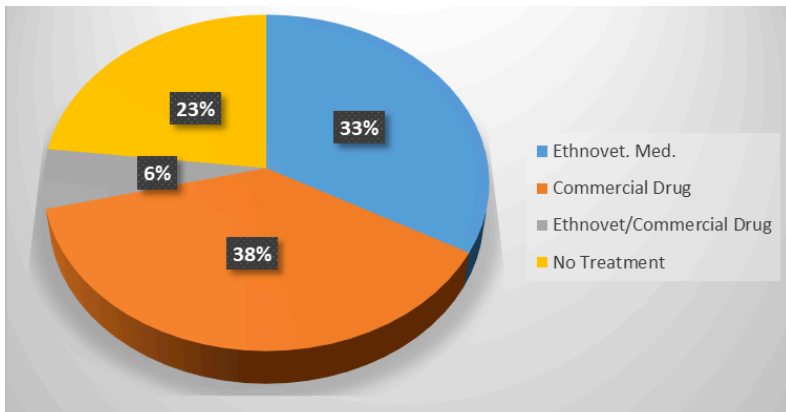


Figure 2. Treatment used against diseases in native chicken

The use of commercial drugs has become widely accepted, given their ease in preparation and fast relief, making them popular among farmers. However, they are also expensive for native chicken raisers who utilize available herbal medicines in the locality to avoid spending money.

The continued popularity of traditional medicines in native chicken production can be attributed to the high cost of synthetic drugs (Chema and Ward, 1990), increased consumer awareness on the toxic effects of synthetic drugs (Kaemmerer and Butenkotter, 1973), and development of resistance to these drugs (Maingi, et al., 1996).

Additionally, Moreki (1997) attributes the widespread use of traditional remedies to the raisers' meager knowledge in utilizing vaccines, as well as their relative unavailability and the relative lack of cooling facilities. In fact, twenty-three percent (23%) of the surveyed chicken farmers are still unable to treat their ailing flock.

Information sources on ethno-veterinary medicine use

Figure 3 shows that twenty-seven percent (27%) of the respondents said that their knowledge on the use of ethno-veterinary medicine as treatment came from their elders, 16% from their parents, 9% from neighbors, 5% from government technicians, and 2% from relatives. About 2% discovered it themselves; while other sources of information came from NGO advocates, radio programs, advertisements and seminars, accounting for the remaining 2%.

These results confirm that the knowledge on using different medicinal plants for treating animal diseases was practiced a long time ago (Panda and Dhal, 2014) and mostly the custody of older people who passed on the information from one generation to another by word of mouth (Masimba, et al. 2011).

Moreover, the resurgence of the popularity of organically-grown poultry that discouraged the use of antibiotic and synthetic drugs led to the promotion of herbal plants as alternative medicine. These prompted animal raisers to utilize them.

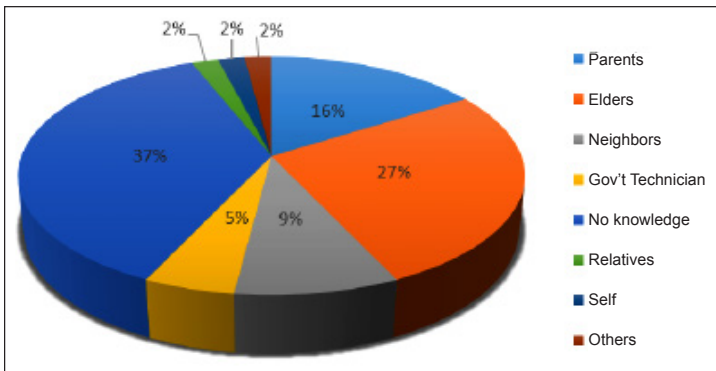


Figure 3. Sources of information on the use of EVM to treat diseases

Common herbal medicines and ethno-remedies

Table 1 shows twenty-four herbal plants identified by native chicken raisers as having therapeutic properties against specific diseases in chicken with their preparation and frequency of application. The leaves, fruits, seeds, stem and roots are the most commonly utilized parts of the plant, and applied either as poultice or as extract/juice. Frequency of administration vary from once a day, twice a day, or every other day until the animal is cured. Other than these herbs, five ethno-remedies were mentioned, such as newly cooked rice, salt, vinegar, goat's manure, and sugar.

Table 1. Common herbal medicines and other ethno remedies, their preparation and frequency of application by native chicken raisers in Davao Region

Herbal Medicine	Common/Local Name	Disease Treated	Preparation	Frequency of Application	Authors with Related Findings
1 <i>Capsicum annuum</i>	Siling labuyo	Fowl pox and infectious coryza	Crush one to three pieces of the fruit and apply as poultice to the affected part.	Apply once a day until cured.	Chavanduka, 1976 Gueye, 1998
2 <i>Piper nigrum</i>	Paminta	Common cold	Administer the crushed fruit orally.	Treat once a day until cured.	
3 <i>Zingiber officinale</i>	Luy-a	Fowl pox; Infectious coryza	Pound 3 pieces of black pepper seeds and give orally; or apply to affected area as poultice	Treat once a day until cured.	Lalit and Pande, 2010 Come and Zamora, 2014
4 <i>Allium sativum</i>	Ahos	Fowl pox	Peel and pound the ginger and apply as poultice to the affected parts.	Treat twice a day until cured.	Al-Yahya et al. 1989
5 <i>Blumea balsamifera</i>	Gabon	Fowl pox	Crush a few pieces and apply as poultice on the affected parts.	Treat once a day until cured.	Nwude and Ibrahim, 1980
6 <i>Citrofortunella microcarpa</i>	Lemonsito	Common colds; cough	Pre-heat the leaves before extracting the juice. Administer orally.	Treat two times a day until cured	Ducusin, 2017
7 <i>Ficus septica</i>	Lagnub	Common cold; Pullorum	Pre-heat the fruit before extracting the juice. Directly squeeze the juice into the mouth or mix in drinking water.	Treat once a day until cured.	Ducusin, 2017
8 <i>Ocimum basilicum</i>	Sangig	Infectious coryza	The infected parts are cleaned and the pus removed. Apply latex from the leaves of <i>Ficus septica</i> to the affected area.	Treat once a day until cured.	Come and Zamora, 2014
9 <i>Origanum vulgare</i>	Kalabo	Common colds; Infectious coryza	Pre-heat 3-5 leaves before rubbing over the nostrils, then feed to the birds afterwards.	Treat twice a day until cured.	Ducusin, 2017
10 <i>Euphorbia hirta</i>	Tawa-tawa	Common colds	Wash and pre-heat 4 pieces of oregano leaves before extracting the juice. Administer 2 ml of juice orally or mix the extract in drinking water.	Give twice a day (morning and afternoon) until cured.	Come and Zamora, 2014
			Wash and pre-heat 5 leaves of tawa-tawa for 1 minute. Extract the juice and administer orally or mix in drinking water..	Treat twice a day until cured.	Ducusin, 2017

Herbal Medicine	Common/Local Name	Disease Treated	Preparation	Frequency of Application	Authors with Related Findings
11 <i>Annona muricata L.</i>	Labana	Common colds; Infectious coryza	Collect 2 shoots of leaves of guyabano and grill over fire. Pre-heated leaves are then given orally.	Treat every morning until cured.	Ducusin, 2017
12 <i>Cocos nucifera</i>	Lubi	Common colds	Remove and grind the coconut meat. Administer orally.	Treat every two days until cured.	Come and Zamora, 2014
13 <i>Solanum diphyllum</i>	"Teramaysin"	Infectious coryza; common colds and other ailments	Offer 1-3 pieces of green berries once a day to treat and prevent diseases.	Administer daily.	Singh, 2019
14 <i>Coleus blumei</i> Benth	Mayana	Common colds	Wash and pre-heat 3-4 leaves of mayana. Collect juice and administer orally or mix in drinking water.	Administer twice a day until cured.	Ducusin, 2017
15 <i>Vitex negundo</i>	Lagundi	Cough and colds	Pre-heat the leaves and pound to extract the sap. Give one tablespoon of sap every morning.	Administer everyday for 1-2 weeks until cough and colds disappear.	Panda and Dhal, 2014
16 <i>Tinospora rumphii</i> Boerl	Pangyawan	Cough and colds	Soak 5 inches of stem in 1 liter of water for 3 days. Use the solution as drinking water.	Offer solution for 1 week.	Come and Zamora, 2014
17 <i>Moringa oleifera Lam.</i>	Kamunggay	Infectious coryza	Wash the leaves and extract the juice. Administer orally.	Administer as much as you can per day until cured.	Morski, 2012
		Common colds	Put leaves under direct flame. Extract the juice and administer orally or mix in drinking water.		Abegumrin and Eniola, 2019
		Skin wound	Pound the leaves and apply poultice over the wound.	Treat once a day until cured	
18 <i>Solanum melongena</i>	Talong	Common colds	Wash and pre-heat for 1 minute two leaves of eggplant. Extract the juice and mix with vick's vapor rub and administer orally.	Treat twice a day until cured	Pande et al., 2007
19 <i>Solanum lycopersicum</i> Linn.	Kamatis	Common colds	Place one whole ripe <i>Solanum lycopersicum</i> above a flame for about two minutes, then slice into small pieces enough to be swallowed by the chicken	Administer twice a day (morning and afternoon) until cured.	Pandit, 2010

Herbal Medicine	Common/Local Name	Disease Treated	Preparation	Frequency of Application	Authors with Related Findings
20	<i>Gliricidia sepium</i> Kakawate	Fowl pox	Crush 1 cup of kakawate leaves and apply as poultice to the affected area.	Treat every two days until cured.	Ducusin, 2017
21	<i>Chromolaena odorata</i> Hagonoy	Wound	Crush a handful of hagonoy leaves; squeeze out the sap and apply to open wound	Apply for two consecutive days	Ugonabo et al., 2017
22	<i>Elettaria indica</i> Bilabila	Infectious coryza	Pound goose grass and mix with water until juice can be extracted. Give 1 teaspoon of juice orally.	Apply once a day until cured	Katewa, et al., 2001
23	<i>Jatropha curcas</i> Tuba-tuba	Common colds	Crush two leaves of <i>Jatropha curcas</i> and mix with one tablespoon water	Treat once a day until cured.	Upadhyay, et al., 2011
24	<i>Momordica charantia</i> Ampalaya	Common colds	Extract juice from leaves or fruit. Administer orally.	Treat twice a day until cured.	Come and Zamora, 2014

Ethno Remedies		Common Name	Disease Treated	Preparation	Frequency of Application
1	Newly cooked rice	Kan-on	Common cold; Newcastle disease	Prepare newly cooked rice and force feed while still hot to infected chicken	Apply to sick birds early in the morning until cured.
2	Salt	Asin	Infectious coryza	Clean and remove pus from the infected area; rub salt or salt mixed with crushed chili pepper.	Apply twice a day until cured.
3	Vinegar	Suka	Newcastle disease	Wet the entire body of the infected bird with vinegar.	Administer twice a day (morning and afternoon) until cured
4	Goat feces	Tae sa kanding	Infectious coryza	Collect and apply goat feces over the affected area as poultice.	Apply once a day until cured.
5	Sugar	Asukal	Common colds	Add 1 tablespoon of sugar in drinking water. Administer orally.	Apply once a day until cured.
			Infectious coryza	Apply as poultice over the affected area.	Treat twice a day until cured.

Parasites and their control

Among the commonly observed parasites of native chicken, as reported by raisers, were roundworms, lice, tapeworms, mites and fleas. In order to control them, various remedies are resorted to. Figure 4 shows that 41% of the respondents do not practice de-worming, while the rest de-worm their flock using herbs (33%), commercial de-wormers (21%), or a combination of both (5%).

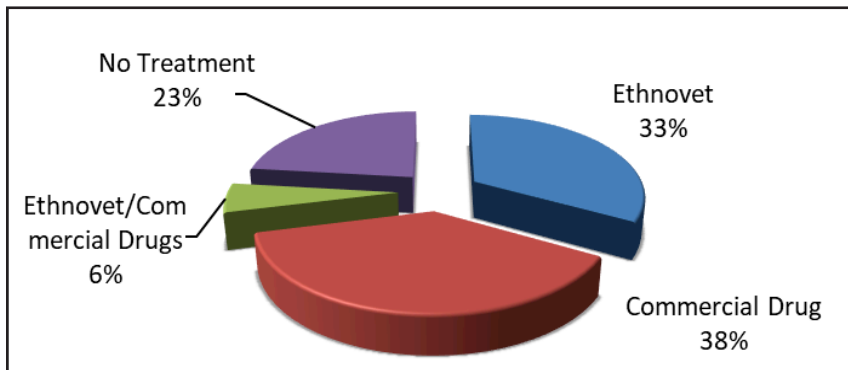


Figure 4. Method of controlling parasitism in native chicken.

De-worming is seldom practiced in native chicken production because the chickens are often raised free range, making it difficult and impractical to catch and hold each bird for de-worming.

There were 7 herbal plants identified against internal parasites in native chicken, as shown in Table 2. These include *Areca catechu*, *Carica papaya*, *Tinospora rumphii*, *Momordica charantia*, *Leucaena leucocephala*, *Chavica betle* and *Capsicum annum*. Most often, the seeds are utilized in the preparation, although the leaves and fruits can also be used solely as extract or mixed with lime, ash or water. Oral administration is the preferred route while intervals between deworming vary, from once a month to as long as every six (6) months.

As for the control of external parasites (Table 3), 6 medicinal plants and 1 method were identified, namely: *Cymbopogon citrates*, *Artocarpus odovatissimus*, *Trena orientalis*, *Capsicum anuum*, *Moringa oleifera*, *Cocos nuciferos* and smoking. Leaves of plants are placed inside cages to drive away ectoparasites, or extract may be applied directly or sprayed into the body and in the nest.

Table 2. Common herbal dewormers, their preparation and frequency of application by native chicken raisers in Davao Region.

Herbal Medicine	Common Name	Parasite Treated	Preparation	Frequency of Application	
1 <i>Areca catechu</i>	Bunga	Internal	Prepare matured bunga by removing the husky part; for young chicken cut into 4 pieces, and for adults, 1 bunga seed is good for 2 heads.	Treat against internal parasites once a month.	Ducusin, 2017; Pande et al., 2007
2 <i>Carica papaya</i>	Kapayas	Internal	Collect and dry 5 to 8 seeds of ripe papaya and administer orally.	Give once every 3 months.	Nwude, N. and Ibrahim, M.A. 1980
3 <i>Tinospora rumphii</i> Boerl	Panyawan	Internal	Pound 1 leaf of panyawan and administer orally.	Give once every 6 months	Come and Zamora, 2014
4 <i>Momordica charantia</i>	Ampalaya	Internal	Collect and extract the juice and administer 2 ml of the extract orally.	Give once every 3 months	Come and Zamora, 2014
5 <i>Leucaena leucocephala</i>	Ipil-Ipil	Internal	Chop leaves of ipil-ipil and boil. Use decoction as drinking water of native chicken. Dry seeds and powder. Administer orally to expel worms.	Give once every 3 months	Ducusin, 2017
6 <i>Chavica betle</i> L.	Buyo	Internal	Dry and crush buyo leaves into powder form, then mix with lime or "apog" (powdered sea shells). Mix 1 tablespoon of mixture to 1 kg of feeds.	Feed the mixture for two days.	Ducusin, 2017
7 <i>Capsicum annuum</i>	Siling labuyo	Internal	Crush fruits or leaves, mix with ash and water, then drench.	Treat infected chicken twice a week until cured.	Chavunduka, 1976 Gueye, 1998

Table 3. Common herbal treatments against ectoparasites, their preparation and frequency of application by native chicken raisers in Davao Region.

Herbal Medicine	Common Name	Parasite Treated	Preparation	Frequency of Application	Authors with Related Findings
1 <i>Cymbopogon citratus</i>	Tanglad	Fowl mite	For treatment of fowl mites: lemon grass was placed in the chicken cage before the hens lay eggs	Place lemon grass leaves in the chicken cage once and remove until the brooding stage	Ducusin, 2017
2 <i>Artocarpus odoratissimus</i>	Marang	Fowl mite	For treatment of fowl mites: select matured dried leaves and place in the chicken cage before the hens lay eggs	Place matured dried leaves once in the nesting area during laying period up to brooding stage.	Bakar, et al., 2009
3 <i>Trema orientalis</i>	Anagdong (<i>Anabiong</i>)	Fowl mite	Put as much leaves in the cage or in the nest to evict fowl mites.	Apply until mites are gone.	Adinortey, et al., 2013
4 <i>Capsicum anuum</i>	Siling labuyo	Fowl mite	Squeeze 10 pieces of the fruit to extract the juice. Mix with 1 liter of water.	Spray directly to the hen and nest. Apply until the mites are gone.	Chavunduka, 1976 Gueye, 1998
5 <i>Moringa oleifera</i>	Kamunggay	Fowl mite	Pound and rub malunggay leaves in the body of chicken to avoid fowl mites.	Administer until fowl mites are gone.	Ducusin, 2017
6 <i>Cocos nucifera</i>	Lubi	Fowl mite	Extract the coconut milk and apply to the body of the bird.	Apply every three days until mites are gone.	Ducusin, 2017
7 <i>Smoking</i>	Paaso	Fowl mite	Create smoke near the nest making sure the smoke will cover the affected area	Smoke at least twice a day (morning and afternoon) until the mites are eliminated	

Conclusion and Recommendation

Study results showed that local native chicken raisers in the region still utilize different herbal medicines and ethno-remedies for the treatment of poultry diseases and control of parasites despite the advent of modern drugs. These ethno-veterinary practices were handed down from their elders, parents, and neighbors. Other entities promoting organic chicken production also promoted the use of herbal medicines, which serve as useful alternative to impoverished farmers and raisers due to their availability.

However, there is still the need to standardize and validate the efficacy of these treatments before they are recommended for use, especially for native chicken raisers that do not treat or deworm their flock.

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