

Promotion of Ethno-Veterinary Practices for Small Ruminants

An Action Research Study by SEVA, Tamil Nadu

SEVA (Sustainable Agriculture and Environmental Voluntary Action) is an NGO involved in documenting and disseminating indigenous knowledge and grassroot innovations in Tamil Nadu, as also the conservation of local livestock breeds. For the last 20 years, SEVA has been documenting ethno-veterinary practices for livestock rearing and has trained over 4,000 farmers, some of whom practice as livestock healers in various parts of Tamil Nadu.

In 2008, SEVA initiated a study on the comparative efficacy of herbal and chemical de-wormers on sheep flocks. Shepherd communities from the Nallampalayam and Vembur clusters in the Thiruppur and Thoothukudi districts respectively, were selected by SEVA to be a part of this research study. The Nallampalayam and Vembur clusters are home to the Mecheri and Vembur breeds of sheep respectively. Farmers in the area have marginal land-holdings and maintain a flock of 30-40 sheep per family. For many households, sheep rearing is the only source of livelihood. The average annual income of shepherds in the area is Rs 30,000 from a herd of 20 sheep.



Mecheri sheep grazing on Korangadu pasture
covered 2,385 sheep belonging to 72 pastoralists in 8 villages in the Thiruppur and Thoothukudi districts^v. These sheep were reared either under an open grazing system and / or on private pasture lands (for example *korangadu* in Nallampalayam).

Sheep in both clusters are reared under an open grazing system. However, in Nallampalayam most farmers also maintain *korangadu*ⁱ pasture land for grazing their sheep. Shepherds in the area have limited access to veterinary health care services. According to data collected by SEVA, the average annual mortality of adult sheep is over 15%. The major diseases accounting for this high mortality are outbreaks of FMDⁱⁱ, Blue Tongueⁱⁱⁱ and PPR^{iv}.

The study initiated by SEVA was spread over a period of six months from April to September (summer to pre-monsoon season) 2008 and

Three trial groups were formed as detailed below:

- T1 – control group (not administered either the chemical de-wormer or the herbal de-wormer)
- T2 – administered the conventional de-worming drug Fenbendazole
- T3 – administered the herbal de-wormer^{vi} and *masala bolus*^{vii}

While Fenbendazole was administered to sheep in the T2 group, once in three months, as per a medically prescribed schedule and dosage of 10 ml per sheep, the quantity of the herbal de-wormer administered to the sheep was 30 ml for adult sheep and 10 ml for lambs, once every two months i.e. thrice during the study period. *Masala bolus* was also administered, as an immunity booster, every alternate month to each sheep in the T3 group. The *masala bolus* is the size of a large *amla* (Indian gooseberry) weighing approximately 20 gm. The *masala bolus* were given twice daily for three days every alternate month during the study period.



Local healers separating leaves from various medicinal plants to prepare masala bolus

Faecal samples of all three groups were collected on the 0, 3rd, 7th, 10th, and 14th day of administration of the two de-wormers and sent to the Madras Veterinary College, Chennai, for microscopic assessment of EPG (Eggs per gram) count. Similar data was collected over a period of six months. It was observed that during the data collection period the sheep in both the T2 and T3 groups were free from symptoms of any infectious diseases.

As per the EPG (egg per gram) count reported by the Madras Veterinary College, reduction in mean EPG was evident in both the treated groups over the untreated group (T1 – Control group). The percentage reduction of the faecal egg count on the 14th day of treatment was 78.87 and 73.65 in the Fenbendazole and herbal de-wormer administered group respectively. The overall reduction percentage in EPG on the 14th day after treatment was 94.18 and 88.64 for Fenbendazole and the herbal de-wormer administered groups respectively. The results demonstrated that the effectiveness of the herbal de-wormer was comparable to that of the chemical de-wormer Fenbandazole.



Masala bolus coated with turmeric powder ready for administering to the livestock

Considering the zero side-effects of the herbal de-wormer and its easy availability in remote rural areas, the herbal de-wormer had a higher replication potential as an ethno veterinary practice. The general feedback collected by SEVA from farmers who participated in the research trial, and whose sheep were administered both the herbal de-wormer and the *masala bolus*, confirmed that flocks were more active and agile than before. Additionally, farmers observed a positive change in the grazing behavior of sheep in terms of an increased appetite.

Some shepherds however expressed their difficulty in preparing and administering the *masala bolus*. Following the positive results of the field experiment, while some shepherds have taken up the preparation and use of both the herbal de-wormer and the *masala bolus* on a regular basis, a few local healers in the villages use some of the ingredients of the *masala bolus* to make their own preparations to cure ailing livestock in the vicinity. The medicinal plants used to prepare the herbal de-wormer and the *masala bolus*, are found in abundance in waste lands and agricultural fields. A few agricultural farms maintained by NGOs like Pitchandikulam Forests are also a good source of these medicinal plants. Further, since only leaves and branches are required to prepare the herbal de-wormer and the *masala bolus*, these medicinal plants are never uprooted.

SEVA continues to hold medical camps in various villages across Tamil Nadu to train people on preparing and administering the herbal de-wormer and the *masala bolus*. It has been observed that villagers readily bring their cattle and other livestock to these camps and help administer the herbal medicines. Usually a central place easily accessible by two-three villages is selected for the camp so that a maximum number of people and livestock can benefit.

SEVA has also supported a landless labourer, Mr Chellamuthu^{viii} from Karukkampalayam village in district



A local healer administering the masala bolus

Erode, to set up a small processing unit to prepare the herbal de-wormer. The de-wormer is sold at Rs 80^{ix} per litre. While some livestock rearers come to purchase the de-wormer from the processing unit itself, a number of others place an order over telephone and Mr Chellamuthu delivers the required quantity.

The cost of the herbal de-wormer is comparable to that of the chemical de-wormer Fenbendazole (refer to Table 1). The herbal de-wormer can also be prepared by livestock rearers on their own as the ingredients are easily available around homestead areas unlike the chemical de-wormer which has to be purchased from a chemist.

Table 1

Type of De-wormer	Cost per litre	Dosage	Cost per dose per animal	Administration during the 6 months study period
Fenbendazole	Rs 350	10ml@ Rs 0.35/ml	Rs 3.5	Twice @ Rs 7
Herbal De-wormer	Rs 80	30ml@ Rs .08/ml	Rs 2.4	Thrice @ Rs 7.2

This action based research study conducted by SEVA confirms that a participatory process of verification of local practices in combination with scientific assessment techniques has a higher potential for adoption by rural farmers.

Based on documentation undertaken by Sanjeev Kumar, The Goat Trust, for SA PPLPP and inputs provided by Mr. P. Vivekanandan Executive Director, SEVA, Madurai and Dr. N. Kumaravelu, Associate Professor, Tamil Nadu Veterinary and Animal Sciences University, Chennai.

ⁱ *Korangadu* are privately owned pasturelands in the semi-arid tracts of Tamil Nadu. These comprise a combination of cenchrus grass, horse gram, *Phaseolus trilobus* (wild gram) and *Acacia leucophloea* (white bark acacia) trees, surrounded with live fencing of *Commiphora berryii*.

ⁱⁱ Foot-and-mouth disease (FMD) is a highly contagious viral disease affecting both large and small ruminants, and is transmitted by the picorna virus, the prototypic member of the genus aphthovirus. The virus can survive in contaminated fodder and in the environment for up to a month, depending on temperature and pH conditions. FMD is not a zoonotic disease and cannot be transmitted to humans.

ⁱⁱⁱ Blue-tongue is a non-contagious vector borne viral disease affecting sheep. The virus is an arbovirus that naturally infects domestic animals and is transmitted by several species of Culicoides (biting midges). The insect vectors of the blue-tongue virus breed in moist conditions in a variety of habitats, particularly damp, muddy areas and in faecal and plant matter.

^{iv} Peste des Petits Ruminants (PPR), also known as goat plague, is caused by a virus closely related to the rinderpest virus, canine distemper virus, and the human measles virus. Morbidity up to 100 % and mortality rates between 20 and 90 % are common, except in endemic areas or when mild disease occurs.

^v In the Nallampalayam cluster 1,028 sheep belonging to 40 farmers and in the Vembur cluster 1,357 sheep belonging to 32 farmers were selected for the action based study.

^{vi} The herbal de-wormer, also called *Poochi marunthu*, is prepared with leaves of *Vitex negundo* (five leaved chaste tree), aloe vera, *Clerodendrum inerme* (wild jasmine), *Calotropis* and the seeds of *Azadirachta Indica* (Neem). One kg of each of these ingredients is ground and made into a liquid extract which can be stored up to 3 months. This is administered orally to adult sheep (30 ml) and lamb (10 ml). The ingredients and method of preparation for both the herbal de-wormer and the *masala bolus* was shared by two local healers Mr Chellamuthu and the late Mr Mookkan respectively.

^{vii} The *masala bolus* is made in the size of a big amla (Indian Gooseberry) fruit from the following ingredients: Kandankathri (*Solanum surattense*), Thumbai (*Leucas aspera*), Kuppaimeni (*Acalypha indica*), Veeli leaves (*Cadaba farinosa*), Peruthumbai (*Leucas martinicensis*), Usilai (*Albizia amara*), Tulsi (*Ocimum tenuiflorum*), Avarampoo (*Cassia auriculata*), Moongil (*Bambusa arundinacia*), Puliampirandai (*Vitis setosa*), Thuthi (*Abutilon indicum*), Musumusukkai (*Mukia maderaspatana*), Kolunchi (*Tephrosia purpurea*), Manjanathi (*Marinda tinctoria*), Veliparuthi (*Pergularia daemia*), Nilavembu (*Andrographis paniculata*), Virali (*Dodonaea viscosa*) and Mavilangam (*Crateva adansonii*). 50 grams each of the above ingredients is collected, shade dried, pounded well and used.

In addition, 10 grams each of the following ingredients are collected and made into a powder - Thippili (*Piper longum*), Seeragam (*Cuminum cyminum*), Sombu (*Foeniculum vulgare*), Perungayam (*Ferula asafoetida*), Valmilagu (*Piper cubeba*), Sukku (*Zingiber officinale* – dried), Pepper (*Piper nigrum*), Chillis (*capsicum*

annuum), Kasakasa (*Papaver somniferum*), Lavangam (*Cinnamomum zeylanicum*), Fenugreek (*Trigonella foenumgraecum*), Omam (*Trachyspermum ammi*), Seeds of coriander (*Coriandrum sativum*)

In addition, Banana (*Musa paradisiaca*) one inflorescence, and 100 grams each of unripe Kaleathi fruits (*Ficus tinctoria*), Guava bark (*Psidium guajava*), Sotru katalai (Aloe vera), Garlic (*Allium sativum*) and Kollankovaikilangu (*Corollacarpus epigaeus*), 500 grams of Pirandai (*Cissus quadrangularis*), 250 grams of Onion and one Coconut, are also used.

The above ingredients are ground, mixed well and made into *boluses* and dusted with turmeric powder. Almost 60-100 boluses can be made using the above listed quantity of ingredients. The shelf life of the *masala bolus* is three days.

^{viii} Mr Chellamuthu received the SRISTI Samman award in year 2000 for the herbal formulation for control of crop pests. In 2002, he also received the National Innovation Foundation (NIF, Ahmedabad) award conferred to him by Dr APJ Abdul Kalam, the then president of India.

^{ix} The current rate (in May 2014) of the Herbal De-wormer is Rs 100 per litre.

Photo credit: Mr Sanjeev Kumar, The Goat Trust and Mr P. Vivekanandan, SEVA.

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