Importance of antiparasitic drugs in animal health and production

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Importance of livestock for Rural communities

- Livestock is a critically important asset in rural communities across Africa.
- The well-being and health of livestock is important for the communities.
- Parasitic diseases rank amongst top diseases which impact the productivity of livestock adversely.
Why should we control parasites / parasitic diseases?

- To reduce/ minimize economic losses
- To safeguard animal health
- To maintain animal welfare
- To reduce / minimize risk of parasitic zoonoses
Need for use of antiparasitics to reduce/minimize economic losses

<table>
<thead>
<tr>
<th>Tick species</th>
<th>Live-weight-gain loss (g)</th>
<th>Milk loss (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amblyomma hebraeum (Norval et al., 1989)</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Amblyomma variegatum (Pegram &amp; Oosterwijk, 1990)</td>
<td>45-60*</td>
<td>-</td>
</tr>
<tr>
<td>Amblyomma americanum (Barnard, 1985)</td>
<td>16-29</td>
<td>-</td>
</tr>
<tr>
<td>Amblyomma maculatum (Williams, Hair &amp; McNew, 1978)</td>
<td>33</td>
<td>-</td>
</tr>
<tr>
<td>Boophilus microplus (Sutherst et al., 1988)</td>
<td>0.6-1.5</td>
<td>-</td>
</tr>
<tr>
<td>Rhipicephalus appendiculatus (Norval et al., 1988)</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Rhipicephalus appendiculatus (de Castro et al., 1985b)</td>
<td>NSD</td>
<td>-</td>
</tr>
</tbody>
</table>

*Excluding compensatory live-weight gain

• NSD Non sufficient data
Need for use of antiparasitics to maintain animal welfare
Need for use of antiparasitics to reduce/minimize risk of zoonotic diseases

A 16-yr old Kazak girl suffering from severe secondary hydatidosis – following an unsuccessful surgical operation (Xinjiang, PRC, 1989).
Need for use of antiparasitics to safeguard animal health

*Boophilus microlus* engorged female

*Babesia bigemina*

*Anaplasma marginale*
Need for use of antiparasitics to safeguard animal health

*Rhipicephalus appendiculatus*

Theileria infection
Need for use of antiparasitics to safeguard animal health
Antiparasitic drugs

- Ectoparasiticides
- Endoparasiticides
- Endectocides

- Effectively kills/removes adult and immature parasite
- Safe
- Easy to administer
- Economic for producer
- With holding period
Control of Ectoparasites: Ectoparasiticides

Chemical control of Ectoparasites (Chemical groups available)

- Organochlorines
- Organophosphates (e.g. Coumaphos, Trichlorfon)
- Carbamates (e.g. Propoxur)
- Synthetic pyrethroids (e.g. Flumethrin, Cypermethrin, Deltamethrin)
- Amidines (e.g. Amitraz, Cymiazole)
- Macro cyclic lactones (e.g. Ivermectin, Doramectin, Moxidectin)
- IGR (e.g. Fluazuron)
- Pyrazole group (e.g. Fipronil)
- Spinosad
Formulations available to apply Ectoparasiticide

- Dips (herds)
- Spray (hand sprayer fewer animals, spray races)
- Dust (few animals)
- Pour on (herds)
- Injectables (herds)
- Ear Tags (herds)
- Pheromone/acaricide impregnated devices (tail band): few animals
Application of Ectoparasiticides

Plunge dips:
Formulation used is EC, several thousands of litre of chemicals needed, chemical disposal is difficult, stress to animals, stripping, checking chemical quality from time to time
Application of Ectoparasiticides

**Hand spray**: Formulation used are EC, WP, SC

Tedious, time consuming

**Spray races**: Formulation used are EC,

Time consuming, difficult to reach underbelly
Application of Ectoparasiticides

Pour On:

Less stress to animal, No requirement for disposal, No water requirement for solution, no pumps etc. Easy to apply.
Application of Ectoparasiticides

Injectable:
ML are used as injectable To control endo and ectoparasites

Disease transmission from one animal to other and lesions at injection sites
Application of Ectoparasiticides

- Eartags:
- Effective way of controlling
- Flies, efficacy for 4-5 months
Control of Endo parasites

- Chemical control of Endoparasites (chemical groups available: anti nematodes)
  - Benzimidazoles and Probenzimidazoles (e.g. fenbendazole, albendazole, oxibendazole, febantel)
  - Imidazothiazoles (e.g. levamisole)
  - Tetrahydropyrimidine (e.g. Pyrantel)
  - Piperazines
  - Organophosphates (e.g. trichlorphon)
  - Octadepsipeptides (e.g. emodepside)
  - Amino acetonitrile derivatives (Monepantel)
Control of Endo parasites

- Chemical control of Endoparasites (chemical groups available: anti cestodes)
  - Praziquantel
  - Epsiprantel
  - Benzimidazoles
- Chemical control of Endoparasites (chemical groups available: anti trematodes)
  - Clorsulon
  - Salicylanilides (e.g. closantel, rafoxanide)
  - Triclabendazole
Control of Endo parasites

- Chemical control of Endoparasites (chemical groups available: anti protozoal: anticoccidials)

- Ionophores (e.g. monensin, lasalocid)
- Amprolium
- Diclazuril
- Toltrazuril
- Quinolones (e.g. decoquinate)
Control of Endo parasites

- Chemical control of Endoparasites (chemical groups available: anti protozoal)
  - Imidocarb dipropionate
  - Diminazene acetuarte
  - Pantamidines
  - Buparvaquones
  - Quinapyramine
  - Isometamidium
Formulations available to apply Endoparasiticides

- Oral suspensions
- Injections
- In feed
Control of endo and ectoparasites: 
endectocides

Chemical control of endo and ecto parasites (chemical groups available: Macrocyclic lactones
• Ivermectin
• Doramectin
• Eprinomectin
• Moxidectin
• Abamectin
• Selamectin
• Milbemycin oxime

⇒ Large spectrum: intestinal worms, lung worms, ectoparasites: mange, lice, oestus ovis, parafilaria, Thelazia, Horn flies (Cochliomiya), Hypoderma bovis, Ticks (Boophilus spp)
Formulations available to apply
Endoparasiticides

- Injectable: Cattle, Swine - broad spectrum

- Oral drench / in feed: Sheep, Swine, Goat - mainly endoparasites + Itch mite (Psorergates ovis) + oestrus ovis

- Pour on: Cattle - mainly endoparasites, Hypoderma bovis, Lice, Mange (Sarcoptes and Chorioptes), Horn flies (Haematobia irritans)
What you need to know about antiparasitic drugs before use

• Dosage

• Formulations and route of administration
• Any special concerns?

• Is it toxic to host?

• Mechanism of action

• Teratogenicity

• Resistance

• Withdrawal time