

Trapping systems, insecticide evaluation, and protocols for the prevention and treatment of cattle myiasis

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Webstory



Technological solution

Recent outbreaks in Central America and Mexico made plain that detection and reporting fail before treatment does: not every country has an official control program or systematic records of the epidemiological situation. Nor is there a preventive vaccine, so control rests on treatment and management; treatment is expensive, in product and in the labor hours spent inspecting wounds that are susceptible or already infested, and signs of chemical resistance are emerging that no standardized methodology can confirm in the region. Trapping systems supply a signal that adult flies are present where today only the clinical case is recorded. The in vitro platform measures larval response to each chemical group and links the dose given to the animal with the concentration reached in the parasite. The management protocols and the regional training move the intervention back to the point where the wound can still be avoided.



Technological description

The adult New World screwworm (*Cochliomyia hominivorax*) searching for a wound, the larva feeding on living tissue, and the open wound before the eggs are laid are the points of the cycle where this technology intervenes. The adult stage is covered by trapping systems for early detection, with configurations selected on prior evidence and operational feasibility. The larval stage is covered by an in vitro experimental platform that exposes larvae to rising insecticide concentrations, builds dose-response curves, and measures the concentration reached inside them; it is calibrated with doramectin and ivermectin as model drugs and extended to topical organophosphates and to essential oils obtained by steam distillation. The wound itself is covered by herd-level management protocols: wound prevention, neonatal inspection, and precision treatment. The reference sector is beef cattle production, with scope for other species affected by myiasis.



Impacts and results

A standardized experimental platform for assessing larval susceptibility to different insecticidal compounds, backed by a pharmacokinetic and pharmacodynamic model, heads the expected results, alongside preventive and therapeutic protocols validated under commercial production conditions through the comparison of treated and control animals on days 3, 7, and 14. The same platform will establish whether *Cochliomyia macellaria* can serve as a model species for testing drugs against *Cochliomyia hominivorax*, identifying the chemical groups in which the two species respond alike and those in which they do not. On early detection, one to two trapping systems will be validated in endemic and at-risk areas, with standardized protocols for installation, monitoring, and data recording, and their results integrated into epidemiological early-warning tools. The outputs are completed by harmonized technical guides, a regional network of professionals, and scientific publications.



2

Trapping systems to be validated in the field



2

Expected prevention and control protocols validated



40

Technical and scientific personnel to be trained



4

Scientific publications committed

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